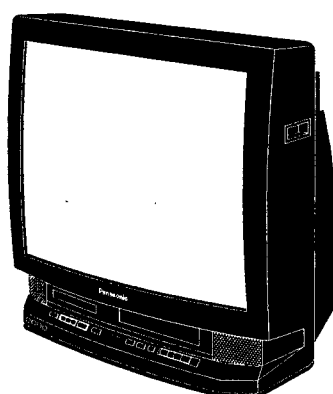


Service Manual

TV/DVD/VCR Combination

PV-DM2799



ITEM	SPECIFICATION	ITEM	SPECIFICATION
VCR	Head: 4 rotary heads helical scanning system	VCR	Tape Format: Tape width 1/2" (12.7 mm) high density tape
	Input Level: VIDEO IN Jack (Phono type) 1.0 Vp-p 75Ω unbalanced	FM RADIO	Band Range: 87.5 ~ 108.1 MHz
	Signal-to-Noise Ratio: SP: more than 43 dB LP/SLP: more than 41 dB	DVD	Discs Played: (1) DVD-VIDEO disc: 5" (12 cm) single-sided, single-layer 5" (12 cm) single-sided, double-layer 5" (12 cm) double-sided, double-layer (one layer per side) 3" (8 cm) single-sided, single-layer 3" (8 cm) single-sided, double-layer 3" (8 cm) double-sided, double-layer (one layer per side) (2) Compact disc (CD-DA, VIDEO CD): 5" (12 cm) disc, 3" (8 cm) disc
	Horizontal Resolution: Color/Monochrome: more than 230 lines		
	Head: Normal Mono: 1 stationary head Hi-Fi Stereo: 2 rotary heads		
	Input Level: AUDIO IN Jack (Phono type) -10 dBv 50kΩ unbalanced		
	Output Level: AUDIO OUT Jack (Phono type) -8 dBv 1kΩ unbalanced		
	Frequency Response: Normal Mono: SP: 100 Hz ~ 8 kHz LP: 100 Hz ~ 6 kHz SLP: 100 Hz ~ 5 kHz Hi-Fi Stereo: SP/LP/SLP: 20 Hz ~ 20 kHz		
	Signal-to-Noise Ratio: Normal Mono: SP: more than 42 dB LP/SLP: more than 40 dB Hi-Fi Stereo: SP/LP/SLP: more than 60 dB	Digital Audio Output	Optical digital output: Optical connector Coaxial digital output: Pin jack
	Wow and Flutter: Normal Mono: SP: Less than 0.2% WRMS LP: Less than 0.3% WRMS SLP: Less than 0.4% WRMS Hi-Fi Stereo: Less than 0.015% WRMS	Pickup	Wave length: 655 nm Laser power: CLASS II
	Broadcast Channels: VHF 2 ~ 13, UHF 14 ~ 69	DISPLAY	Picture Tube: 27 inch measured diagonal 100° deflection Picture Tube
Tuner	CABLE Channels: Midband A through I (14 ~ 22) Superband J through W (23 ~ 36) Hyperband AA ~ EEE (37 ~ 64) Lowband A-5 ~ A-1 (95 ~ 99) Special CABLE channel 5A (01) Ultraband 65 ~ 94, 100 ~ 125	GENERAL	Power: Source: 120V AC ± 10%, 60 Hz ± 0.5% Consumption: Approx. 170 watts (Power on), Approx. 5.5 watts (Power off)
	SP: 1-5/16 i.p.s (33.35 mm/sec), LP: 21/32 i.p.s (16.67 mm/sec), SLP: 7/16 i.p.s (11.12 mm/sec) Record/Playback Time: 8 Hrs with 160 min. type tape used in SLP mode FF/REW Time: Less than 3 min. (120 min. type tape)		Television System: EIA Standard (525 lines, 60 fields) NTSC Color Signal
Tape Speed			Operating Condition: 41°F(5°C) ~ 95°F(35°C) (Temperature) 10% ~ 75% (Humidity)
			Dimension: 27-1/16"(688 mm) (W) X 25-11/16"(653 mm) (H) X 21-5/8"(550 mm) (D) Weight: 89.1 lbs. (40.5 kg)

Weight and dimensions shown are approximate.
Designs and specifications are subject to change without notice.

Panasonic®

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WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public. It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product. Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

TABLE OF CONTENTS

SAFETY PRECAUTIONS	1-1
X-RADIATION	1-1
PREVENTION OF ESD TO ES DEVICES	1-3
OPERATION GUIDE	1-4
SERVICE NOTES	1-11
IC, Transistor and Chip Part Information	1-26

DISASSEMBLY/ASSEMBLY PROCEDURES

Disassembly/Assembly	
Procedures of Cabinet	2-1
Disassembly/Assembly	
Procedures of Mechanism	2-7
Disassembly/Assembly	
Procedures of Cassette Up Ass'y	2-17

ADJUSTMENT PROCEDURES

Service Fixtures and Tools	2-19
Mechanical Adjustment	2-20
Electrical Adjustment	2-26
Test Points and Control Location	2-34

SCHEMATIC DIAGRAMS

Schematic Diagram	
and Circuit Board Layout Notes	3-1
Audio/Video Jack Schematic Diagram	3-1
Main I (Timer/OSD/Data Slicer) Schematic Diagram ...	3-2
Main II (Signal Process) Schematic Diagram	3-3
Main III (TV Y/C Process) Schematic Diagram	3-5
Main IV (System Control/Servo) Schematic Diagram ...	3-7
Main V (Power Supply) Schematic Diagram	3-8
Hi-Fi Audio I Schematic Diagram	3-9
Hi-Fi Audio II/Operation Schematic Diagram	3-11
Hi-Fi Audio/Video Head Amp Schematic Diagram	3-12
Capstan Stator/Junction/Loading Motor	
/Audio Control Head Schematic Diagram	3-13
DVD Sub I/Digital Audio Schematic Diagram	3-14
DVD Sub II Schematic Diagram	3-15
DVD Sub III Schematic Diagram	3-16
TV Main Schematic Diagram	3-17
CRT Schematic Diagram	3-18
Interconnection Schematic Diagram	3-19
Signal Waveform	3-20
Voltage Chart	3-22

CIRCUIT BOARD LAYOUT

Main (Power Supply/Signal Process/OSD	
/TV Y/C Process/System Control/Servo	
/Timer/Operation) C.B.A. VEPS3077A	4-1
Hi-Fi Audio C.B.A. VEPS4029A	4-3
TV Main C.B.A. LRP61011A	4-4
Operation C.B.A. VEPS8056A	4-5
Audio/Video Jack C.B.A. VEPS0A68A	4-5
Digital Audio C.B.A. LRP63016A	4-5
Hi-Fi Audio/Video Head Amp C.B.A. VEPS5019A	4-5
CRT C.B.A. LRP63013A	4-6
Junction C.B.A. VEPS0A25A	4-6
Capstan Stator Unit	4-6
Loading Motor P.C.B.	4-6
Audio Control Head P.C.B.	4-6
DVD Sub C.B.A. LRP63012A	4-7

BLOCK DIAGRAMS

Power Supply Block Diagram	5-1
Video Block Diagram	5-2
Audio Signal Path 1 Block Diagram	5-3
Audio Signal Path 2 Block Diagram	5-4
System Control Block Diagram	5-5
Servo Block Diagram	5-6
TV Y/C Process Block Diagram	5-7
Troubleshooting Hints	5-8

EXPLODED VIEWS

1. Mechanism (Top) Section	6-1
2. Mechanism (Bottom) Section	6-2
3. Cassette Up Compartment Section	6-3
4. Chassis Frame Section (1)	6-4
5. Chassis Frame Section (2)	6-5
6. Packing Parts	
and Accessories Section	6-6

REPLACEMENT PARTS LISTS

Replacement Notes	7-1
Mechanical Replacement Parts List	7-2
Electrical Replacement Parts List	7-4

SAFETY PRECAUTIONS

GENERAL GUIDELINES

1. IMPORTANT SAFETY NOTICE

There are special components used in this equipment which are important for safety. These parts are marked by Δ in the Schematic Diagrams, Circuit Board Layout, Exploded Views and Replacement Parts List. It is essential that these critical parts should be replaced with manufacturer's specified parts to prevent X-RADIATION, shock, fire, or other hazards. Do not modify the original design without permission of manufacturer.

2. An Isolation Transformer should always be used during the servicing of Combination VCR whose chassis is not isolated from the AC power line. Use a transformer of adequate power rating as this protects the technician from accidents resulting in personal injury from electrical shocks. It will also protect Combination VCR from being damaged by accidental shorting that may occur during servicing.
3. When servicing, observe the original lead dress, especially the lead dress in the high voltage circuits. If a short circuit is found, replace all parts which have been overheated or damaged by the short circuit.
4. After servicing, see to it that all the protective devices such as insulation barriers, insulation papers, shield, and isolation R-C combinations are properly installed.
5. Before turning the receiver on, measure the resistance between B+ line and chassis ground. Connect (-) side of an ohmmeter to the B+ lines, and (+) side to chassis ground. Each line should have more resistance than specified, as follows :

B+ Line	Minimum Resistance
130V	1K ohm (Hot chassis ground)
27V	180 ohms (Cold chassis ground)
17V	110 ohms (Cold chassis ground)

6. When the TV set is not used for a long period of time, unplug the power cord from the AC outlet.
7. Potentials, as high as 32.0KV are present when this TV set is in operation. Operation of the TV set without the rear cover involves the danger of a shock hazard from the TV set power supply. Servicing should not be attempted by anyone who is not thoroughly familiar with the precautions necessary when working on high voltage equipment. Always discharge the anode of the picture tube to the CRT ground of receiver before handling the tube.
8. After servicing make the following leakage current checks to prevent the customer from being exposed to shock hazards.

LEAKAGE CURRENT COLD CHECK

1. Unplug the AC cord and connect a jumper between the two prongs on the plug.
2. For physically operated power switches, turn power on. Otherwise skip step 2.
3. Measure the resistance value, with an ohmmeter, between the jumpered AC plug and each exposed metallic cabinet part on the receiver, such as screwheads, connectors, etc. When the exposed metallic part has a return path to the chassis, the reading should be between 1 M ohm and 12 M ohms. When the exposed metal does not have a return path to the chassis, the reading must be infinity.

LEAKAGE CURRENT HOT CHECK

1. Plug the AC cord directly into the AC outlet. Do not use a isolation transformer for this check.
2. Connect a 1.5K ohms, 10 watts resistor, in parallel with a 0.15 micro farad capacitor, between each exposed metallic part on the set and a good earth ground, as shown in Figure 1.
3. Use an AC voltmeter, with 1000 ohms/volt or more sensitivity, to measure the potential across the resistor.
4. Check each exposed metallic part, and measure the voltage at each point.
5. Reverse the AC plug in the AC outlet and repeat each of the above measurements.
6. The potential at any point should not exceed 0.75 volt RMS. A leakage current tester (Simpson Model 229 equivalent) may be used to make the hot checks. Leakage current must not exceed 1/2 milliampere. In case a measurement is outside of the limits specified, there is a possibility of shock hazard, and the receiver should be repaired and rechecked before it is returned to the customer.

Hot-Check Circuit

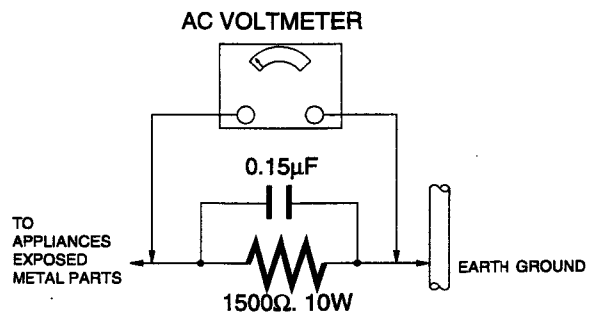


Figure 1

X-RADIATION

WARNING :

1. The potential source of X-Radiation in TV sets is the High Voltage section and the picture tube.
2. When using a picture tube test fixture for service, ensure that the fixture is capable of handling 32.0KV without causing X-Radiation.

NOTE :

It is important to use an accurate periodically calibrated high voltage meter.

1. Reduce the brightness to minimum.
2. Set the SERVICE switch to SERVICE .
3. Measure the High Voltage. The meter reading should indicate 30.0 +/- 2.0KV. If the meter indication is out of tolerance, immediate service and correction is required to prevent the possibility of premature component failure.
4. To prevent an X-Radiation possibly, it is essential to use the specified picture tube.

HORIZONTAL OSCILLATOR DISABLE CIRCUIT TEST

SERVICE WARNING :

The test must be made as a final check before set is returned to the customer.

1. With the rear cover removed, supply about a 120V AC power source to the set, turn on the set.
2. Set the customer controls to normal operating positions.
3. Short between TP891 and TP892 on the Main circuit board with a jumper wire. Confirm that the picture goes out of horizontal sync.
4. If this does not occur, the horizontal oscillator disable circuit is not operating. Follow the Repair Procedures of horizontal oscillator disable circuit before the set is returned to customer.

REPAIR PROCEDURES OF HORIZONTAL OSCILLATOR DISABLE CIRCUIT

1. Connect a DC voltmeter between capacitor C513 (+) on the Main circuit board and chassis ground.
2. If approximately +21.9V is not present at that point when 120V AC is applied, find the cause. Check R503, R5505, C5507, C513 and D503.
3. Carefully check above specified parts and related circuits and parts. When the circuit is repaired, try the horizontal oscillator disable circuit test again.

CIRCUIT EXPLANATION

HORIZONTAL OSCILLATOR DISABLE CIRCUIT

The positive DC voltage, supplied from the D503 cathode for monitoring high voltage, is applied to the IC5301 Pin11 through R503 and R5504. Under normal conditions, the voltage at IC5301 Pin 11 is less than approx 3V. If the high voltage at Flyback Tr Pin 5 exceeds the specified voltage, the positive DC voltage which is supplied from the D503 cathode also increases. The increased voltage is applied to IC5301 Pin11 through R503 and R5504. Due to the increased voltage at IC5301 Pin11, the horizontal oscillator frequency increases, the picture goes out of horizontal sync, the beam current decreases and the picture becomes dark in order to keep X-radiation under specification.

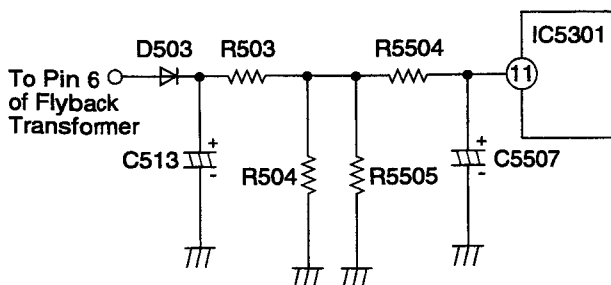


Figure 2

LASER PRODUCT

CLASS I LASER PRODUCT

- This equipment is certified to comply with DHHS Rules 21 CFR Chapter 1, Subchapter J in effect as of date of manufacture. (Only for U.S.A.)

This equipment is classified as a Class I (Class 1) level LASER Product and there is no hazardous LASER radiation with the safety protection.

Caution:

Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

Danger:

The serviceman should not remove the cover of drive unit and should not service because the drive unit is a non-serviceable parts. Please check that the label on the top of the drive unit.

Never touch the internal parts in order to avoid EXPOSURE TO VISIBLE LASER RADIATION.

Unplug the AC power cord to the equipment when opening the top cover.

When the power switch is On, do not place your eyes close to the front panel opening door or the other openings to look into the interior unit.

LASER Specification

Class I level A LASER Product (Class 1 level A LASER Product)

Wave Length: 660 - 675 nm (at DVD)
775 - 815 nm (at CD)

Laser Power: No hazardous radiation is emitted with the safety protection.

PRECAUTION OF LASER DIODE

CAUTION :

This unit utilizes a class II laser. Visible laser radiation is emitted from the optical pickup lens when the unit is turned on:

1. Do not look directly into the pickup lens.
2. Do not use optical instruments to look at the pickup lens.
3. Do not adjust the preset variable resistor on the optical pickup.
4. Do not disassemble the optical pickup unit.
5. If the optical pickup is replaced, use the manufactures specified replacement pickup only.
6. Use of control or adjustment or performance of procedures other than those specified herein may result in hazardous radiation exposure.

PREVENTION OF ELECTRO-STATIC DISCHARGE (ESD) TO ELECTROSTATICALLY SENSITIVE (ES) DEVICES

Some semiconductor (solid state) devices can be damaged easily by static electricity. Such components commonly are called Electrostatically Sensitive (ES) Devices. Examples of typical ES devices are integrated circuits and some field-effect transistors are semiconductor "chip" components. The following techniques should be used to help reduce the incidence of component damage caused by electrostatic discharge (ESD).

1. Immediately before handling any semiconductor component or semiconductor-equipped assembly, drain off any ESD on your body touching a known earth ground. Alternatively, obtain and wear a commercially available discharging ESD wrist strap, which should be removed for potential shock reasons prior to applying power to the unit under test.
2. After removing an electrical assembly equipped with ES devices, place the assembly on a conductive surface such as aluminum foil, to prevent electrostatic charge buildup or exposure of the assembly.
3. Use only a grounded-tip soldering iron to solder or unsolder ES devices.
4. Use only an anti-static solder removal device. Some solder removal devices not classified as "anti-static (ESD protected)" can generate electrical charge sufficient to damage ES devices.
5. Do not use freon-propelled chemicals. These can generate electrical charges sufficient to damage ES devices.
6. Do not remove a replacement ES device from its protective package until immediately before you are ready to install it. (Most replacement ES devices are packaged with leads electrically shorted together by conductive foam, aluminum foil or comparable conductive material).
7. Immediately before removing the protective material from the leads of a replacement ES device, touch the protective material to the chassis or circuit assembly into which the device will be installed.

CAUTION:

Be sure no power is applied to the chassis or circuit, and observe all other safety precautions.

8. Minimize bodily motions when handling unpackaged replacement ES devices. (Otherwise harmless motion such as the brushing together of your clothes fabric or the lifting of your foot from a carpeted floor can generate static electricity (ESD) sufficient to damage an ES device).

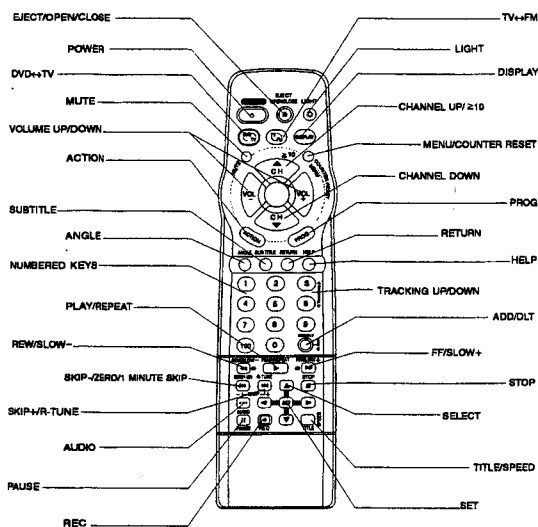
"NOTE to CATV system installer :

This reminder is provided to call the CATV system installer's attention to Article 820-40 of the NEC that provides guidelines for proper grounding and, in particular, specifies that the cable ground shall be connected to the grounding system of the building, as close to the point of cable entry as practical."

OPERATION GUIDE

Location of Controls

Remote Control Buttons



Light Tower® Illuminated Remote Control

LIGHT button:

When LIGHT is pressed, (DVD+TV, TV+FM, DISPLAY, CH UP/DOWN, VOL. UP/DOWN, ACTION or PROG) buttons will light for 5 seconds for easy button location. If no button is pressed in 5 seconds, the light goes out to conserve the battery.

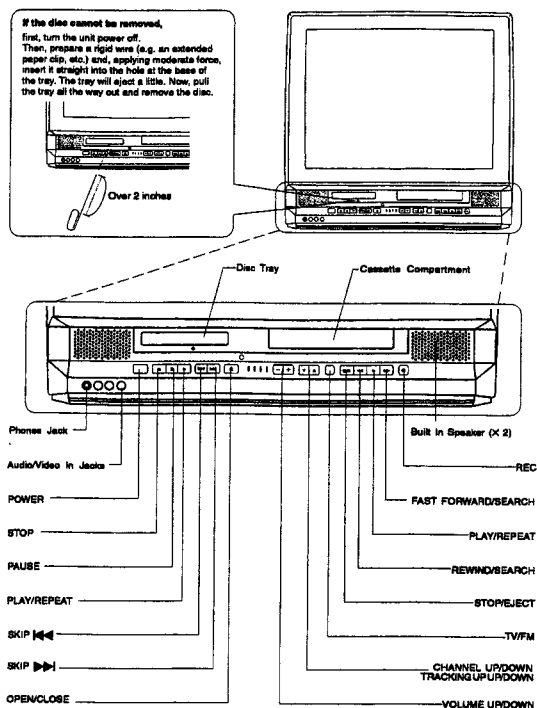
EJECT button:

When this button is pressed in TV mode, the tape is ejected. This button is inoperative if pressed during recording. If pressed in DVD mode, the disc tray opens or closes.

HELP button:

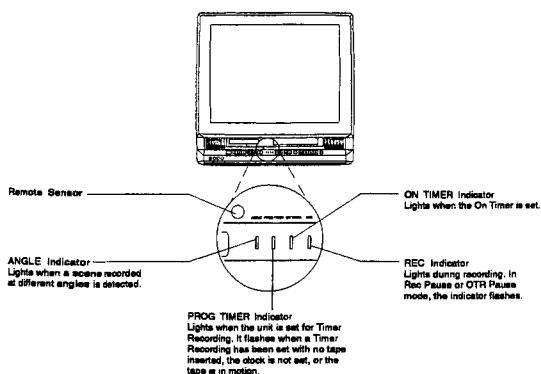
When HELP is pressed, a simple operation guide is displayed to help you through an operation.

Front View of the unit

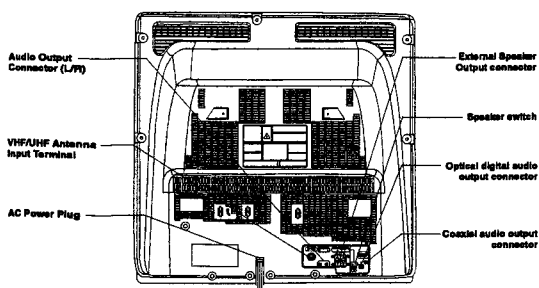


Location of Controls (continued)

Indicators on the Front Panel



Rear View of the unit



Before Using

Disc formats supported by this unit

	DVD	3" (8 cm) disc/5" (12 cm) disc
	Video CD	3" (8 cm) disc/5" (12 cm) disc
	CD	3" (8 cm) disc/5" (12 cm) disc

Discs which cannot be played with this unit

- DVD with Region No. other than "1" or "ALL"
- DVD of PAL system
- DVD-ROM
- DVD-R/DVD-RAM
- CD-ROM
- CDV
- CD-G
- CD-RW
- Do not try to play Photo CD or CD-R.

Definition of terms

Angle
Some DVD discs feature scenes simultaneously shot from different angles. The ANGLE button can be used to view the scene from different angles. (ANGLE indicator lights on the unit when a scene recorded at different angles is detected.)

Chapter number
Titles are subdivided into numbered sections. You can quickly search for a favorite scene using these numbers.

DVD
A high-density optical disc on which high-quality pictures and sound have been digitally recorded. DVD incorporates new video compression technology (MPEG II) and high-density recording technology which allow entire movies to be recorded with incredible playback quality.

Playback control
With Video CD (version 2.0), scenes or information may be selected for viewing or listening from an interactive menu that appears on the TV screen.

Subtitles
Written dialogue which appears at the bottom of the screen.

Time number
The elapsed play time from the start of a disc or title. Use to quickly find scenes. (May not work with some discs.)

Title number
For DVD discs with two or more titles, the title is numbered as title 1, title 2, etc.

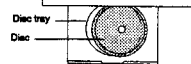
Track number
Numbers assigned to tracks on Video CDs and CDs to allow specific tracks to be quickly located.

Video CD
CD containing picture and sound with same quality level as video tape. This unit also supports Video CDs with playback control (version 2.0).

Disc handling

Handling precautions

- Only hold disc by edges as shown. Fingerprints, dirt, and scratches can cause skipping and distortion.
- Do not write on label side of disc.
- Never use record cleaning spray, benzene, thinner, static electricity prevention liquids, or any other solvent.
- Be careful not to drop or bend disc.
- Do not place more than 1 disc on disc tray.
- Do not try to close disc tray when disc is not properly placed.
- Always store discs in their proper cases when not in use.



To clean disc surface

With a soft, damp (water only) cloth, gently wipe from the center hole to the outer edge as shown below. (Wiping in a circular pattern will scratch the surface.)



If disc is brought from a cold to a warm environment, moisture may form on the disc. Wipe away moisture with a soft, dry, lint-free cloth before using disc. (See above.)

Improper disc storage

- Discs could be damaged if stored or left in areas:
 - exposed to direct sunlight.
 - that are humid or dusty.
 - near heat (i.e. heater, radiator, etc.).

Apparatus Claims of U.S. Patent Nos. 4,631,603, 4,577,218, and 4,818,098, licensed for limited viewing uses only.

This product incorporates copyright protection technology that is protected by method claims of certain U.S. Patents and other intellectual property rights owned by Macrovision Corporation and other rights owners. Use of the copyright protection technology must be authorized by Macrovision Corporation, and is intended for home and other limited viewing uses only unless otherwise authorized by Macrovision Corporation. Reverse engineering or disassembly is prohibited.

Connections

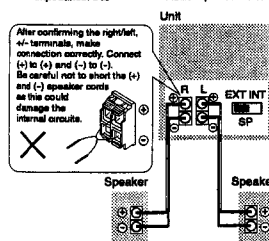
Audio connections

Unit → Speaker

At first, be sure to slide the **SPEAKER** Switch to "EXT." The unit speaker(s) can be turned off to enjoy external audio sound.

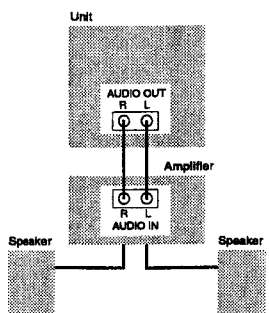
Please note:

- Make sure connected external speakers are as follows:
Impedance: 8 Ω
- Audio input: over 3 W



Unit → Amplifier → Speaker

Do the "Speaker ON/OFF system" steps on page 35, and select "OFF".



Check list before you begin.

- Turn down the volume, then turn the unit, as well as other equipment to be connected, off before proceeding with connection.
- Do not block ventilation holes of any of the equipment and arrange them so that air can circulate freely.
- Read through the instructions before connecting other equipment.
- Ensure that you observe the color coding when connecting audio and video cables.

Enjoying digital audio output from the digital audio output connector

Notes on audio output from the optical/coaxial digital audio output connector

Disc	Sound recording format	Optical/coaxial digital audio output from connector
DVD	Dolby Digital (AC-3)	Dolby Digital bitstream (2+1 ch) or PCM (2ch) (48 kHz/16 bit)
	Linear PCM (48/96 kHz/16/20/24 bit)	Linear PCM (2ch) (48 kHz sampling/16 bit only)* or no output**
Video CD	MPEG 1	PCM (44.1 kHz sampling)
	Linear PCM	Linear PCM (44.1 kHz sampling)

*1 The type of audio output from the connector can be selected by the DVD initial settings.

*2 Sound having 96 kHz sampling is converted into 48 kHz sampling when it is output from the unit's optical/coaxial digital audio output connector.

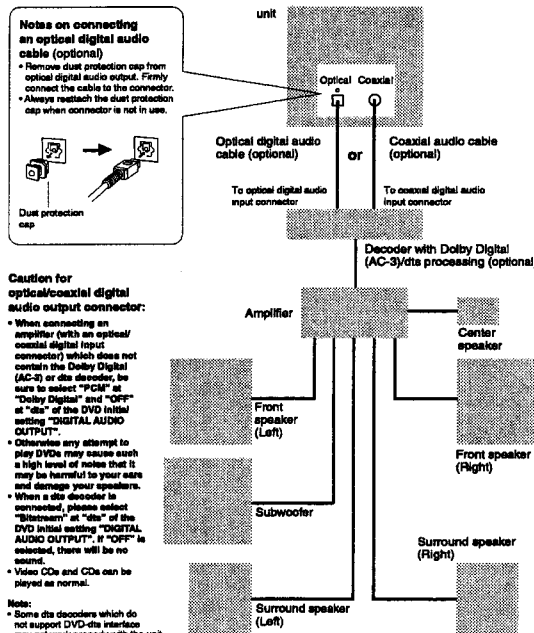
For your reference:

- Dolby Digital (AC-3) is a digital sound compression technique developed by the Dolby Laboratories Licensing Corporation. Supporting 5.1-channel surround sound, as well as stereo (2-channel) sound, this technique enables a large quantity of sound data to be efficiently recorded on a disc.
- Linear PCM is a signal recording format used in CDs. While CDs are recorded in 44.1 kHz/16 bit, DVDs are recorded in 48 kHz/16 bit up to 96 kHz/24 bit.
- If you have a Dolby Pro Logic Surround decoder, you will obtain the full benefit of Pro Logic from the same DVD movies that provide full 5.1-channel Dolby Digital soundtracks, as well as from titles with the Dolby Surround mark.

Manufactured under license from Dolby Laboratories, "Dolby", "AC-3", "Pro Logic" and the double-D symbol are trademarks of Dolby Laboratories. Confidential Unpublished Works. © 1992-1997 Dolby Laboratories, Inc. All rights reserved.

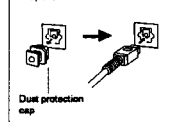
Unit → Decoder with Dolby Digital (AC-3) → Amplifier → Speaker or dts (digital theater systems)

When DVDs recorded in Dolby Digital or dts are played, Dolby Digital bitstream or dts bitstream is output from the unit OPTICAL digital audio output connector or COAXIAL digital audio output connector. When the unit is connected to a Dolby Digital decoder or dts decoder, you can enjoy theater-quality audio in your home. [An optical digital audio cable or coaxial audio cable (both optional) is required when an optional Dolby Digital decoder or dts decoder is used.]



Notes on connecting an optical digital audio cable (optional)

- Remove dust protection cap from optical digital audio output. Firmly connect the cable to the connector.
- Always reattach the dust protection cap when connector is not in use.

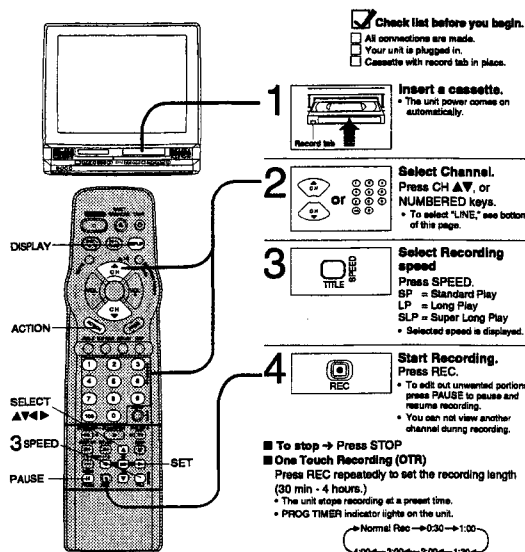


Caution for optical/coaxial digital audio output connector:

- When connecting an amplifier (with an optical/coaxial digital input connector) which does not contain the Dolby Digital (AC-3) or dts decoder, be sure to select "PCM" at "Dolby Digital" and "OFF" at "dts" of the DVD initial setting "DIGITAL AUDIO OUTPUT".
- Observe any attempt to play DVDs may cause such a high level of noise that it may be harmful to your ears and damage your speakers.
- When a dts decoder is connected, please select "Bitstream" at "dts" of the DVD initial setting "DIGITAL AUDIO OUTPUT". If "OFF" is selected, there will be no sound.
- Video CDs and CDs can be played as normal.

Note: Some dts decoders which do not support DVD-dts interface may not work properly with the unit.

Record On a Tape



Selecting Input Mode

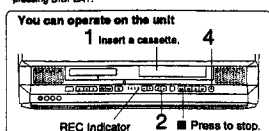
Method 1: Press CH ▲▼. The display will change as follows.

(CABLE) (TV) → 125 or 69

Method 2: a Press ACTION for MAIN MENU. b Press ▲▼ to select "TV", then press SET for SET UP TV screen. c Press ▲▼ to select "INPUT SELECT", and then press SET to select "TUNER" or "LINE". d Press ACTION twice to exit this mode.

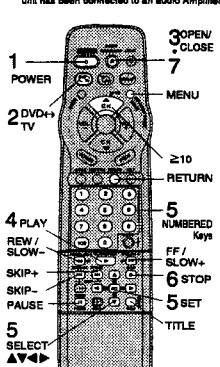
Notes

- It is not possible to record from DVD/Video CD/CD to VHS tape using this unit.
- After the unit has been in Rec Pause mode for 5 minutes, it will stop automatically to protect the tape and video head.
- The remaining recording time of an OTR can be displayed by pressing DISPLAY.

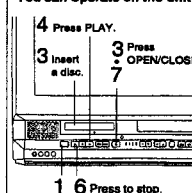


Basic DVD Operation

- Check list before you begin.
 - All connections are made.
 - Your unit is plugged in.
 - Switch on the stereo system's power if the unit has been connected to an audio amplifier.



You can operate on the unit



- * Interactive DVD... May include multiple camera angles, stories, etc.
- ** Video CD with playback control... Particular scenes or information can be interactively selected from a menu that appears on the screen.

- 1 Press **POWER** on the remote or unit.
- 2 Select **DVD mode**. Press **DVD+TV**.
- 3 Insert a disc.
 - 1) Press **OPEN/CLOSE**.
 - 2) Place disc into disc tray.

• Hold disc by its edges only (page 7) with printed side up and use guides to place into tray. Use 120 mm (4 3/4") or 125 mm (5") (12 cm) disc.
- 4 Start play. Press **PLAY**. The disc tray closes automatically.
 - Or, close the tray by pressing **OPEN/CLOSE**.
 - Running time differs depending on disc.

Example of DVD: TITLE MENU, Castles, Lovers, Birds
- 5 Select the desired item.
 - 1) Press **▲▼** or **NUMBERED** key(s) as shown below.
 - 2) Press **SET** to play. Using **NUMBERED** key(s) starts play automatically.

Example: 1 digit number: 1 = 1
2 digit number: 12 = 2:10-1:40
3 digit number: 123 = 1:00-1:40-1:30
Press **SKIP** > or < to go to next or previous menu screen.
• SKIP function not available with all discs. Please refer to disc packet for operation information.

Example of DVD: TITLE MENU, Castles, Lovers, Birds
- 6 Stop play. Press **STOP**.
- 7 Eject the disc. Press **OPEN/CLOSE**.

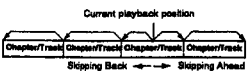
Basic DVD Operation (continued)

To Find a Particular Scene

- Rapid Advance →**
Press FF in play mode
Rapid Reverse →
Press REW in play mode
(To release, press PLAY)
- Sounds are heard during rapid advance at speed 1. (Noise <static> may be heard on DVDs recorded in LPCM format.)
 - Starting rapid advance (reverse) during play started from menu on Video CDs may recall menu.
 - The speed of advance (reverse), slow at first, increases with each additional press of the button up to 5 levels.

To Skip a Chapter/Track

- Skipping Ahead →**
Press SKIP during play
Each press skips a chapter (DVD) or track (Video CD/CD).
- Skipping Back →**
Press I-44 SKIP during play
Pressing once midway through a chapter/track returns to start of that chapter/track. Each additional press skips back one chapter/track.
- Pressing SKIP during play started from menu on Video CDs may recall menu.



To view Still Picture (Pause)

- Press PAUSE during play
(To release, press PLAY)
- DVD/Video CD: The unit will enter still picture mode.
 - CD: The unit will enter pause mode.

To view Frame by Frame Advance (DVD/Video CD)

- Each button press advances picture one frame.
Press PAUSE in still mode
(To resume normal play, press PLAY)
- Hold button down for consecutive frame advances.
 - Whether pictures are advanced by "Frame" or "Field" is selected automatically.

To view Slow Motion (DVD/Video CD)

- Press SLOW+ or SLOW- in still mode
(To release, press PLAY)
- Slow motion speed, slow at first, is increased with each additional press of the button up to 5 levels.
 - For Video CDs, reverse slow motion is not available.

- When appears on the screen while a button is being operated, it means that the corresponding operation is prohibited by the unit or the disc.

RESUME function

The unit memorizes the point where STOP is pressed (by flashes on screen).
Press PLAY to resume play from this point.
Pressing STOP again or opening the tray cancels RESUME.
It is not canceled when power is turned off and on.

- RESUME works only with discs for which elapsed play time is displayed during play.

Auto-Power Off function

Power turns off after unit has been in stop mode (DVD) for about 5 minutes.

Enjoy Video CDs (only) with playback control without using menus <Video CD only>

1. Do steps 1-4 (previous page). When menu appears, press STOP.
2. Press NUMBERED key(s) to select desired track (play begins).
- Check disc for track numbers.
- Press "1" to start at beginning of disc.

To resume main menu
Press STOP, and then MENU. Now, go to step 5 (previous page).

Notes

- Please read the disc packet for operation information.
- Remove disc and press unit POWER off when not in use.
- Disc continues to rotate with menu displayed even after play is done. Press STOP to clear menu display when finished with menu.
- If a single sided disc is placed in upside down, "PLEASE CHECK THE TYPE OF DISCS, AND STAIN OR SCRATCH OF A DISC" is displayed.

Timer Recording

You can set up to 8 programs to be recorded while you are away.

- 1 Display PROGRAM screen.
Press PROG.

- 2 Select TIMER PROGRAM.
1) Press to select.
2) Press SET to display.

- If a program is already in memory, press , and SET to select an unused program number.

- 3 Set the recording DATE.
1) Press to select.
2) Press SET (or) to set.

- 1-31 = One time
- DAILY = MON-FRI
- WEEKLY SUN-SAT = Same time once a week

Example
Today's Date: 8-8-01
SELECT Selection Order: DAILY
WEEKLY (SAT) WEEKLY (MON) WEEKLY (SUN)

- 4 End the program.
Press PROG.

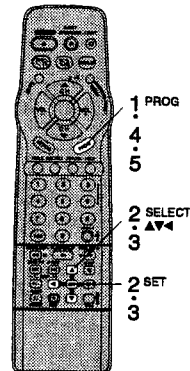
- 5 To Enter More Programs
Press and SET to select and set a blank program number, and then repeat steps 3 and 4.

- 6 Exit this mode.
Press PROG twice.

- If you're using a cable box, make sure that it is turned to the desired channel and the power is left on for timer recording.
- PROG TIMER indicator lights on the unit.

Check list before you begin.

- ☐ All connections are made.
- ☐ Your unit is plugged in.
- ☐ The clock is set to correct time.
- ☐ The tape is long enough.
- ☐ The record tab is in place.



Notes

- 2 minutes before Timer recording is performed, "PLEASE PREPARE FOR TIMER REC" appears and/or the PROG TIMER indicator flashes. Be sure a cassette with record tab is loaded and the unit is in Stop mode.
- If the start times of two programs overlap, the lower numbered program will have priority.
- If the start time for a Timer Recording comes up during a normal recording or One Touch Recording, the Timer Recording will not be performed.
- If there is a power interruption of more than one minute, the recording may not be performed or continue.
- If "INCOMPLETE" appears after all items have been set, check all entries and make necessary corrections.

Timer Recording (continued)

Review, Replace or Clear Program Contents: (Recording is not in progress)

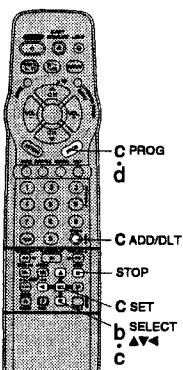
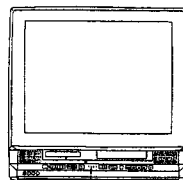
- Repeat steps 1 and 2 on previous page.

- Select the desired program.
Press to select.

- To Replace program...
1) Press SET to display.
2) Press to select and SET or to set new program contents.
3) Press PROG.

To Clear program...
Press ADD/DEL.

- Exit this mode.
Press PROG twice.



Cancel a Timer Recording: (Recording is in progress)

- Hold down STOP for 3 seconds to cancel the Timer Recording.
- Any future daily or weekly recordings will be performed as programmed.

Special VCR Features

Weak Signal Display ON/OFF

When "ON" is selected, picture is displayed even when broadcast signal is weak or nonexistent.

- 1 Display MAIN MENU.
Press ACTION.

- 2 Display SET UP CH screen.
1) Press to select "CH".
2) Press SET to display.

- 3 Select WEAK SIGNAL DISPLAY.
1) Press to select.
2) Press SET to set "ON" or "OFF".

Notes

- "ON" = Picture is displayed regardless of signal condition, and may not always be clearly visible.
- "OFF" = Screen turns solid black when signal is absent or weak.
- If unit is connected to equipment which has black back feature, selecting "ON" will have no effect on the other equipment.

- 4 Return to the normal screen.
Press ACTION twice.

VCR Lock

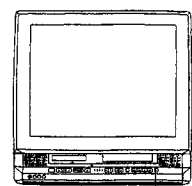
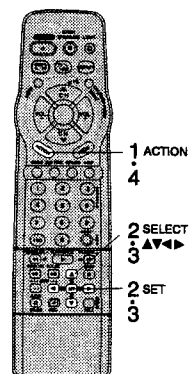
All operations are prohibited except Timer recording and tape eject. Useful for families with small children.

- To turn "ON." In Stop mode, hold down REC on the unit without a cassette inserted for 7 seconds.
- To turn "OFF." Repeat above.

- VCR Lock is cancelled automatically after about 24 hours if clock is set.

Check list before you begin.

- ☐ It is necessary to enter TV mode by pressing DVD+TV before selecting "CH" on the MAIN MENU.



V-Chip Feature

V-Chip Feature is...
The unit has built-in V-Chip Control which allows you to block unwanted TV usage based on Motion Picture and TV Parental Guide ratings.

Enter Secret Code

A 4-digit code must be entered to view a blocked program or change rating settings.

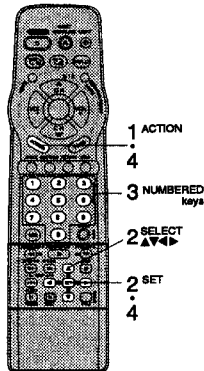
- 1** **Display MAIN MENU.**
Press ACTION.
- 2** **Display LOCK screen.**
1) Press **▲▼** to select "LOCK."
2) Press SET to display.
- 3** **Enter your secret code.**
1) Press NUMBERED keys.
2) Enter same secret code again for confirmation.
• Step 2) not necessary when changing rating or secret code.
To Make Corrections:
Press **←** repeatedly to move the cursor and NUMBERED keys to make the correction.
- 4** **Display LOCK menu for rating screen.**
Press SET and go to:
(MOTION PICT. Ratings)
or (TV PARENTAL Ratings)
Or,
to exit, press ACTION twice.

Change your secret code

• You will need your current code.
Enter your secret code with using NUMBERED keys after step 2 on this page, and press ADD/DEL to clear current code. Repeat steps 3 and 4 to enter new code.

Process of V-Chip Feature

Enter Code → Setup → Blocking



Notes

- Take care that you are not observed entering the secret code.
- Do not forget your secret code.
- Once the rating is locked, the setting cannot be played back unless the correct secret code is entered.

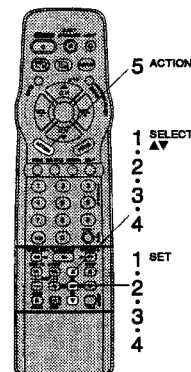
Setup Motion PICT. (Picture) Ratings

If LOCK menu is not displayed, do "Enter Secret Code" steps.

- 1** **Select MOTION PICT. STATUS.**
1) Press **▲▼** to select.
2) Press SET to set "ON" or "OFF."
If you select MOTION PICT. STATUS:
■ "ON" → V-Chip Control is activated.
■ "OFF" → V-Chip Control is deactivated.
- 2** **Select CHANGE SETTINGS.**
1) Press **▲▼** to select.
2) Press SET to display.
- 3** **Select VIEW NR PROGRAMS?**
1) Press **▲▼** to select.
2) Press SET to set "YES" or "NO."
- 4** **NR (Not Rated) PROGRAMS**
Some movies, such as old movies or foreign movies usually have no ratings.
Select ratings to be blocked. (See right.)
1) Press **▲▼** to select.
2) Press SET to set.
- 5** **Redisplay LOCK menu to continue setup.**
Press ACTION and go to (TV PARENTAL Ratings)
Or,
to exit, press ACTION three times.

Process of V-Chip Control Feature

Enter Code → Setup → Blocking



MOTION PICTURE RATINGS	
G	GENERAL AUDIENCE: All ages admitted.
PG	PARENTAL GUIDANCE: Some material may not be suitable for children.
PG-13	PARENTS CAUTIONED: Some material may be inappropriate for children under 13.
R	RESTRICTED: Under 17 requires accompanying parent or adult children.
NC-17	OVER AGE 17 ONLY: No one 17 and under admitted.
X	ADULTS ONLY.

V-Chip Feature (continued)

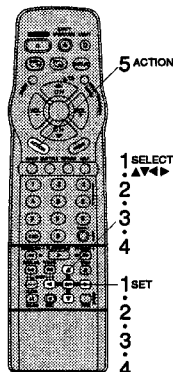
Setup TV PARENTAL Ratings

If LOCK menu is not displayed, do "Enter Secret Code" steps.

- 1** **Select TV PARENTAL STATUS.**
1) Press **▲▼** to select.
2) Press SET to set "ON" or "OFF."
If you select TV PARENTAL STATUS:
■ "ON" → V-Chip Control is activated.
■ "OFF" → V-Chip Control is deactivated.
- 2** **Select CHANGE SETTINGS.**
1) Press **▲▼** to select.
2) Press SET to display.
- 3** **Select VIEW NR PROGRAMS?**
1) Press **▲▼** to select.
2) Press SET to set "YES" or "NO."
- 4** **Select ratings to be blocked. (See next page.)**
1) Repeatedly Press **▲▼** to select.
2) Press SET to set.
Note:
You may select from standard TV ratings (chart 1), or customize to a specific content rating (chart 2).
• Ratings highlighted in RED will be blocked, and those highlighted in GREEN will not be blocked.
- 5** **Exit this mode.**
Press ACTION three times.

Process of V-Chip Control Feature

Enter Code → Setup → Blocking



TV PARENTAL GUIDE RATINGS: Chart 1

TV-Y	FOR ALL CHILDREN: Content specifically geared to young viewers ages 2-6.
TV-Y7	FOR AGE 7 AND OLDER: May contain mild physical or comedic violence which may frighten children under 7.
TV-G	GENERAL AUDIENCE: Contains little or no violence, strong language, or sexual dialogue or situations.
TV-PG	PARENTAL GUIDANCE: May contain infrequent coarse language, limited violence, some suggestive sexual dialogue and situations.
TV-14	PARENTS CAUTIONED: May contain sophisticated themes, sexual situations, strong language, and more intense violence.
TV-MA	MATURE AUDIENCE: May contain mature themes, profane language, graphic violence, and sexual situations.

TV PARENTAL GUIDE RATINGS: Chart 2

FV	Fantasy Violence
V	Violence
S	Sexual Situations
L	Adult Language
D	Sexually Suggestive Dialogue

Process of V-Chip Control Feature

Enter Code → Setup → Blocking

Blocking Message

<When V-Chip Control is activated>

If V-Chip Control is activated, and a program or movie exceeds the ratings you have set, a message will appear and sound is muted.

If DISPLAY is pressed, even when V-Chip control is deactivated, rating is displayed on-screen.

To Continue Viewing a Blocked Program
After entering your 4 digit secret code, go to step 1 and select "OFF" to deactivate V-Chip Control.
• The previous MOTION PICT. and TV PARENTAL settings will be restored.

DVD Operation using On-Screen Displays

When DISPLAY is pressed, On-Screen Displays show disc information (title/chapter/track number, elapsed playing time, audio/subtitle language, and angle) and unit information (repeat play, play mode, Karaoke vocal ON/OFF, etc.).

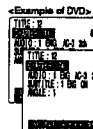
- ☒ Check list before you begin.
☐ If it is necessary, press DVD+TV to enter DVD mode.

- Display On-Screen Displays.**
 Press DISPLAY in play or stop mode.
 • Each time DISPLAY is pressed, On-Screen Display changes as shown below.

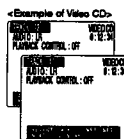
Note
 DISPLAY button does not function while DVD TITLE MENU is displayed.

- Select the desired item.**
 1) Press Δ (or ∇) to select.
 2) Press SET to set.

- Select the desired setting.**
 1) Press Δ to select.
 2) Press SET to set.



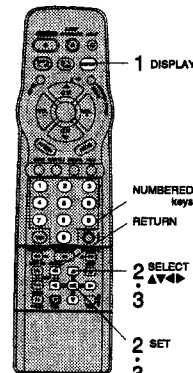
• For some functions the setting will be registered immediately without pressing SET.
 • When numbers are displayed (e.g. title, chapter, track), the NUMBERED keys are also available.
 To make corrections, repeatedly press Δ and SET to move to error, then correct.
 • Pressing Δ is effective for elapsing time instead of the above buttons. Press Δ repeatedly to delete the error, then correct.



To return to the normal screen, press RETURN or DISPLAY repeatedly.

Note
 When DISPLAY button is pressed during playback of a Video CD with playback control, the NUMBERED keys are not available on the displayed screen. In this case, press DISPLAY again to remove the displayed screen.

• When \odot appears on the screen while a button is being operated, it means that the corresponding operation is prohibited by the unit or the disc.



Detailed descriptions of each On-Screen Display

Disc information screen (For DVD)

- 1. TITLE No.**
 • Change the No. by pressing Δ or the NUMBERED keys, and press SET.
- 2. Chapter No.**
 • Change the No. by pressing Δ or the NUMBERED keys, and press SET.
- 3. Audio sound track language (No.)**

ENG	English	SVE	Swedish	CHI	Chinese
FRA	French	NOR	Norwegian	KOR	Korean
DEU	German	DAN	Denish	MAL	Malay
ITA	Italian	POR	Portuguese	VIE	Vietnamese
ESP	Spanish	RUS	Russian	THA	Thai
NLD	Dutch	JPN	Japanese	?	Others

Audio attribute 1 type, sampling frequency, bit No. of the disc.

LPCM	96KHz or 48KHz	16bit 20bit 24bit	Linear PCM disc
AC-3	1ch - 5.1ch		Dolby Digital (AC-3) disc
DTS	1ch - 5.1ch		DTS disc

Number of recorded vocals [DVD Karaoke only]

VOCAL	VOCAL	ON	Karaoke (1 vocal)
		OFF	
	V1+V2		
	V1		Karaoke (2 vocals)
	V2	OFF	

- 4. Subtitles language (No.)**

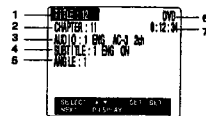
ENG	English	SVE	Swedish	CHI	Chinese
FRA	French	NOR	Norwegian	KOR	Korean
DEU	German	DAN	Denish	MAL	Malay
ITA	Italian	POR	Portuguese	VIE	Vietnamese
ESP	Spanish	RUS	Russian	THA	Thai
NLD	Dutch	JPN	Japanese	?	Others

Subtitles Display ON/OFF

ON	Subtitle is displayed.
OFF	Subtitle is cleared.

- 5. ANGLE No.**
 • Change the No. by pressing Δ , and press SET.
- 6. Disc currently being played**
- 7. Elapsed playing time**

The screen may be changed by selecting the elapsed time.
 • Change the elapsed time by pressing NUMBERED keys.
 (ex) 01:23:45 0 \rightarrow 1 \rightarrow 2 \rightarrow 3 \rightarrow 4 \rightarrow 5
 • The function does not work with some discs.



• Change the No. by pressing Δ , and press SET.

• Change the No. by pressing Δ , and press SET.

• Select "ON" or "OFF" by pressing Δ , and press SET.

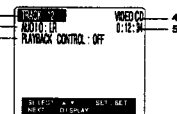
• When \odot appears on the screen while a button is being operated, it means that the corresponding operation is prohibited by the unit or the disc.

DVD Operation using On-Screen Displays (continued)

Detailed descriptions of each On-Screen Display

Disc information screen (For Video CD/CD)

- 1. Track No.**
 • Change the No. by pressing Δ or the NUMBERED keys, and press SET.
- 2. Audio mode**
 • Change the mode by pressing Δ , and press SET.
 LR L R
- 3. Playback control ON/OFF [Video CD with playback control only]**
 ON Video CD menu play is displayed.
 OFF Video CD menu play is cleared.
- 4. Disc currently being played**
 Video CD CD
- 5. Elapsed playing time**



Note
 Track NO. and the elapsed playing time are not displayed during menu play of Video CDs with playback control.

Disc information screen (For Unit)

- Change the desired mode during play by pressing Δ , and press SET.

a. Repeat Play

DVD	CHAPTER REPEAT	TITLE REPEAT	REPEAT OFF
Video CD/CD	TRACK REPEAT	DISC REPEAT	REPEAT OFF

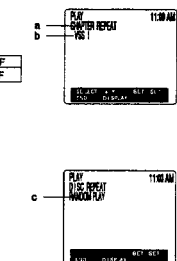
b. Virtual Surround (DVD only)

OFF	
VSS1	Natural effect
VSS2	Emphasized effect

• When "VSS1" or "VSS2" is selected, a "P" mark is displayed while Dolby Digital (AC-3) DVDs are played back.

c. Play mode [Video CD/CD only]

PROGRAM PLAY	program play
RANDOM PLAY	random play
	normal play

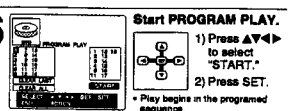
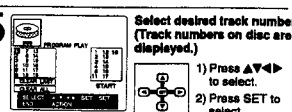
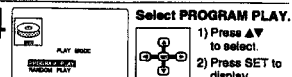
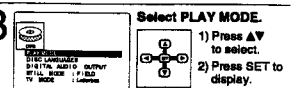
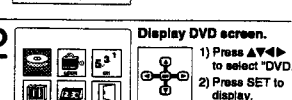


Disc Operation

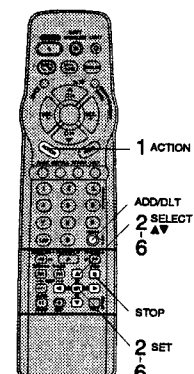
Program Play (Video CD/CD)

You can program specific tracks and order of play.

- 1. Display MAIN MENU.**
 Press ACTION in stop mode.
- 2. Display DVD screen.**
 1) Press Δ to select "DVD."
 2) Press SET to display.
- 3. Select PLAY MODE.**
 1) Press Δ to select.
 2) Press SET to display.
- 4. Select PROGRAM PLAY.**
 1) Press Δ to select.
 2) Press SET to display.
- 5. Select desired track number. (Track numbers on disc are displayed.)**
 1) Press Δ to select.
 2) Press SET to select.
- 6. Start PROGRAM PLAY.**
 1) Press Δ to select "START."
 2) Press SET.



- ☒ Check list before you begin.
 • Video CD or CD is inserted in DVD mode.



Notes
 • Up to 16 tracks can be programmed.
 • "4" or "P" (depending on disc) indicates additional PROGRAM PLAY screen. Press Δ for next or previous screen.

• To clear the last program one by one Press Δ to move to "CLEAR LAST" and press "SET". (Pressing ADD/DEL on remote control also clears last program.)

• To clear all programs Press Δ to move to "CLEAR ALL" and press "SET". (Programs are also cleared when the power is turned off or the disc is removed.)

PROGRAM REPEAT PLAY
 Press PLAY/REPEAT in PROGRAM PLAY mode and Δ to select "PROGRAM REPEAT." To cancel, repeat this to select "REPEAT OFF."

Disc Operation (continued)

Random Play (Video CD/CD)

Tracks are played in a random order.

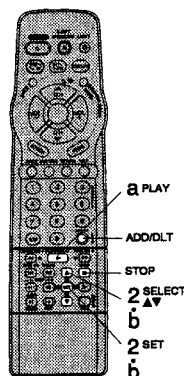
1 Repeat steps 1 - 3 on the previous page.

2 **PLAY MODE**

Select RANDOM PLAY.

- 1) Press **ΔV** to select.
- 2) Press **SET**.

• Random play begins.
• To cancel, press **STOP** during play and then press **ADD/DLT**.



Repeat Play

Set to view or listen to a chapter or title (DVD), or a track (Video CD/CD).

a **PLAY REPEAT**

Set Repeat Play.
Press **PLAY** in play mode.

b **REPEAT OFF**

Select Repeat mode.

- 1) Press **ΔV** to select the desired mode.
- 2) Press **SET** to set. (Displays changes as shown below.)

• DVD CHAPTER REPEAT → TITLE REPEAT → REPEAT OFF

• Video CD/CD TRACK REPEAT → DISC REPEAT → REPEAT OFF

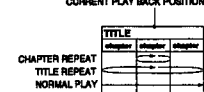
To cancel, repeat this operation to select "REPEAT OFF".

• Repeat play may not work correctly with some DVDs.

• Repeat play works only with discs for which the elapsed playing time appears on-screen display during playback.

For your reference

• CHAPTER/TITLE REPEAT PLAY (DVD)



• TRACK/DISC REPEAT PLAY (Video CD/CD)



Changing subtitle language (DVD only)

You can select a different subtitle language (if offered) than the one set at the initial settings.

1 **SUB TITLE**

Display the subtitle screen.
Press **SUB TITLE** in play mode.

• When no subtitles are offered, "S" will be displayed instead of the language number.

2 **SUB TITLE**

Set the desired language.

- 1) Press **ΔV** to select language.
- 2) Press **▶** (or **◀**) to set.
- 3) Press **▶** (or **◀**) to select "ON" or "OFF."

To return to the normal screen, Press **SUB TITLE**.

Notes

- Subtitles may not change to the selected language immediately.
- When closed captioning is used along with subtitles, they may overlap. If so, turn one function off.
- If, after several presses of the button the language does not change, language selection is not offered on the disc.
- When power is turned on or disc is removed, subtitles revert to initial setting language. If this language is not recorded on the disc, the disc's priority language will appear.

Changing audio soundtrack language (DVD only)

It is possible to change the audio soundtrack language to a different language from the one selected at the initial settings. (This operation works only with discs on which multiple audio soundtracks languages are recorded.)

a **AUDIO**

Display the audio screen.
Press **AUDIO** in play mode.

b **AUDIO**

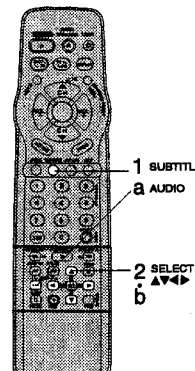
Select the desired language.

- 1) Press **ΔV** to select desired language.

To return to the normal screen, Press **AUDIO**.

Notes

- If, after several presses of the button the language does not change, language selection is not offered on the disc.
- When power is turned on or disc is removed, language reverts to initial setting. If this language is not recorded on the disc, the language recorded will be heard.



Disc Operation (continued)

Viewing from another angle (DVD only)

DVDs may contain scenes shot from multiple camera angles along the same scene to be viewed at different angles. For these discs, the same scene can be viewed from each of these different angles using the **ANGLE** button.

1 **ANGLE**

Display the angle screen.
Press **ANGLE** in play mode.

2 **ANGLE**

Select the desired angle.
Press **ΔV** to select.

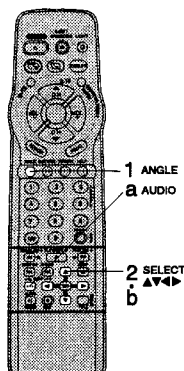
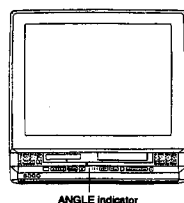
To return to the normal screen, Press **ANGLE**.

Number of angle being played back.

Notes

- **ANGLE** lights on the unit when a scene recorded at different angles is detected.
- The angle number can be set beforehand so that the angle is switched whenever **ANGLE** lights.

When appears on the screen while a button is being operated, it means that the corresponding operation is prohibited by the unit or the disc.



Vocal selection for Karaoke discs (DVD/Video CD)

a **AUDIO**

Display the audio screen.
Press **AUDIO** in play mode.

b **AUDIO**

Select the desired setting.

- 1) Press **ΔV** (or **▶**) to select.
- 2) Press **▶** (or **◀**) to set. (DVD only)

- DVD Karaoke (1 vocal) VOCAL ON ↔ VOCAL OFF
- DVD Karaoke (2 vocals) VOCAL V1 ↔ VOCAL V1 + VOCAL V2 ↔ VOCAL V2 ↔ VOCAL OFF
- Video CD L/R → L → R

Using a title menu (DVD only)

Some DVDs have more than one title (i.e. movies). If the disc offers a title menu, you can select the desired title number. (Operation may vary according to the disc.)

1 **TITLE MENU**

Display the title screen.
Press **TITLE** in play mode.

• Pressing **TITLE** again resumes play from the scene when **TITLE** was first pressed.

2 **TITLE MENU**

Select the desired title.

- 1) Press **ΔV** or **NUMBERED Key(s)** to select.
- 2) Press **SET** to start playing.

• Step 2) not necessary when using **NUMBERED key(s)**.

Using a DVD menu (DVD only)

DVDs may offer a special menu. This menu may include guides to unique contents, audio/subtitle languages, etc. Although contents and operation may vary, the following steps show basic steps to using the menu.

a **DVD MENU**

Display the DVD menu.
Press **MENU** in play mode.

• Pressing **MENU** again resumes play from the scene when **MENU** was first pressed.

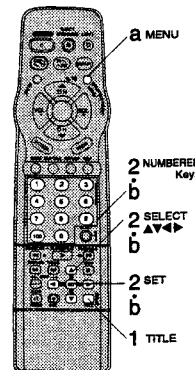
b **DVD MENU**

Select the desired item.

- 1) Press **ΔV** or **NUMBERED Key(s)** to select.
- 2) Press **SET** to perform.

• Step 2) not necessary when using **NUMBERED key(s)**.

If menu continues onto another screen, repeat step b.



DVD Lock Feature

You can prevent playback of DVDs in a specific rating level which may be unsuitable for children.
 * Some DVDs are encoded with a rating level. If the disc rating is higher (stricter) than the one you preset, playback will be prohibited.

Caution

Discs not encoded with rating level will play even if the lock status is set for mature audiences. For these discs, the DVD Lock Ratings will not work.

Setup DVD Lock Ratings (DVD only)

Enter your secret code to display LOCK menu.
 (Do "Enter Secret Code" steps.)

1 **Select DVD LOCK STATUS.**
 1) Press **Δ** to select.
 2) Press **SET** to set "ON" or "OFF".

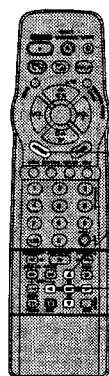
If you select DVD LOCK STATUS:
 ■ "ON" → DVD Lock is activated.
 ■ "OFF" → DVD Lock is deactivated.

2 **Select CHANGE SETTINGS.**
 1) Press **Δ** to select.
 2) Press **SET** to display.

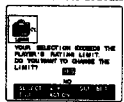
3 **Select RATING LEVEL.**
 1) Press **Δ** to select.
 2) Press **SET** to select "LOCKED" or "UNLOCKED".

- LEVEL 1: Lock All:**
 Playback of all DVDs is prohibited (e.g. to prohibit playback of DVDs for adults which are not encoded with rating level information).
- LEVEL 2: DVDs for children can be played back.** (DVDs for adults/general audiences are prohibited.)
- LEVEL 3 to 7:**
 DVDs for general audiences/children can be played back. (DVDs for adults are prohibited.)
- LEVEL 8: No Limit:**
 All DVDs can be played back. (Factory preset)
- * Ratings highlighted in RED will be blocked, and those highlighted in GREEN will not be blocked.

4 **End setup.**
 Press ACTION three times.



<When DVD Lock is activated>



After DVD Lock is set and a blocked DVD is played, this message will appear.
 The message may differ depending on the disc.

To continue viewing a blocked program for now, Press **Δ** to select "YES" and SET. Then, enter your 4 digit secret code. When "NO" is selected, blocked programs cannot be viewed.

To change the DVD LOCK settings, after entering your secret code in step 3 on page 34, select "OFF" to deactivate DVD Lock or change the rating level.

DVD Initial settings

1 **Display MAIN MENU.**
 Press ACTION in stop mode.

2 **Display DVD screen.**
 1) Press **Δ** to select.
 2) Press SET.

3 **Select the desired item.**
 1) Press **Δ** to select.
 2) Press SET.

DISC LANGUAGES (See below)

All languages offered on the disc can be set. If the language set is not offered on the disc, the original disc language will be selected.

DIGITAL AUDIO OUTPUT

You can set the audio output that comes from the digital audio output terminal.

STILL MODE

To select "Field still" or "Frame still" to prevent jitter from occurring or to let small text or fine patterns seen clearly in the still picture mode. When AUTO is set "Field Still" or "Frame Still" is selected automatically.

TV MODE

To select whether the video material for a wide screen will be played back in the Pan & Scan style or in the Letterbox style on the screen.

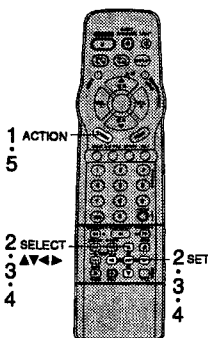
When selecting DISC LANGUAGES (DVD only)

To select and set the language of the audio soundtrack, subtitles, or title/DVD menus for all discs to be played.

4 **Select the desired item.**
 1) Press **Δ** to select.
 2) Press SET repeatedly for language. (Refer to the right.)

5 **Redisplay DVD menu to continue setup.**
 Press ACTION and go to step 3 to setup another setting.
 Or, to exit, press ACTION three times.

Once initial settings are done, they remain in memory (even after power off) until changed. This means the unit will always operate under the same conditions (especially DVDs) each time.



"AUDIO" selections

To select the audio soundtrack language.
 English/French/Spanish (factory preset: English)
 OTHER: Other language selection

"SUB TITLE" selections

To select the subtitle language.
 AUTO: Same language selected for "AUDIO"

(Factory preset)

* If language set for "AUDIO" is used in playback, subtitles will not appear.

* If another language is used during playback, the subtitles will appear in the language selected at the setup "AUDIO".

English/French/Spanish

OTHER: Other language selection

"MENUS" selections

To select the language used in title menus or DVD menus.
 English/French/Spanish (factory preset: English)
 OTHER: Other language selection

To enter OTHER: Other language code number, Press NUMBERED keys (Refer to the language code).

To make corrections, press **Δ** repeatedly to delete the language code number.

* If the selected language is not offered, the original disc language is selected.

DVD Initial settings (continued)

Selecting DIGITAL AUDIO OUTPUT

Select the digital output to be output from the optical / coaxial digital audio output connector of the unit.

1 Do steps 1 and 2 on front page.

2 **Display DIGITAL AUDIO OUTPUT screen.**
 1) Press **Δ** to select.
 2) Press SET.

3 **Select the desired item.**
 1) Press **Δ** to select.
 2) Press SET repeatedly for output.

"LPCM (DVD)" selections

OFF: Only linear PCM of 48 kHz/16 bit is output. When playing DVDs recorded in linear PCM of 48 kHz/20 bit or 96 kHz, no digital audio is output. (Factory preset)

PCM: When playing DVDs recorded in linear PCM of 48 kHz/20 bit/24 bit or 96 kHz, digital audio converted to 48 kHz/16 bit is output. (Digital output of PCM audio is restricted to 48 kHz/16 bit or below for copyright protection.)

"Dolby Digital" selections

Bitstream: Dolby Digital (AC-3) bitstream (2ch-5.1ch) is output. (Factory preset)

PCM: PCM (2ch) of 48 kHz/16 bit is output.

"dts" selections

OFF: No output (Factory preset)

Bitstream: dts bitstream is output.

"Dynamic Range Compression" selections

OFF: Normal audio range is selected. (Factory preset)

ON: For dynamic sound even at low volume, the use of late-night listening. (Dolby Digital (AC-3) DVDs only.)

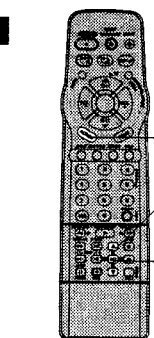
"V.B.S." selections

Virtual Surround Sound creates the effect of sound coming from nonexistent rear speakers even when only connected to a 2-channel stereo system. (Dolby Digital (AC-3) DVDs only.)

VBS 1: Natural effect.

VBS 2: Emphasized effect.

4 **Redisplay DVD menu to continue setup.**
 Press ACTION and go to step 2 to setup another setting.
 Or, to exit, press ACTION three times.



Type of amplifier to be connected	Recommended setting	
No amplifier is connected	LPCM (DVD) OFF	Bitstream OFF
AV amplifier (with digital audio input connector) without Dolby Digital/AC-3 decoder	PCM ¹	PCM ² OFF ³
AV amplifier including Dolby Digital/AC-3 decoder	PCM ¹	Bitstream OFF
AV amplifier including Dolby Digital/AC-3 decoder	PCM ¹	Bitstream Bitstream

* Make settings according to amplifier connected to optical/coaxial audio output as shown in above table.

* When a disc decoder is not connected, to enjoy the DVD, please select audio output other than dts at the disc DVD menu screen. Otherwise, there will be no sound from the unit speakers.

* 1: Audio output from unit is converted to 48 kHz/16 bit in addition to audio from digital audio output.

* 2: To enjoy high quality sound at 48 kHz/20 bit (24 bit or 96 kHz), connect the amplifier or decoder directly to the audio input connectors, not to the digital audio output connector. (Select "OFF" if the "LPCM (DVD)"/

* 3: When connecting an amplifier (with an optical/coaxial digital input connector) which does not contain the Dolby Digital (AC-3) or dts decoder, be sure to select "PCM" or "OFF".

* If "Bitstream" is selected, starting DVD play may cause such a high level of noise as to be harmful to your ears and damage the speakers.

* When a dts decoder is connected, please select "Bitstream" in "dts". If "OFF" is selected, there will be no sound.

NOTES

- The virtual surround effect may not work properly for some DVD software.
- Turn off other surround effects when using this virtual surround effect.
- For optimum effect, the distance between the unit and the listener should be about 3 or 4 times the distance between the right and left front speakers.

Selecting STILL MODE

Set to reduce jitter in a displayed still picture.

1 Do steps 1 and 2 on front page.

2 **Set STILL MODE.**
 1) Press **Δ** to select TV MODE.
 2) Press SET repeatedly to select setting.

AUTO: "Field still" or "Frame still" is automatically selected during the still mode. (Factory preset)

FIELD: "Field still" is always selected. Select this setting when jittering occurs in the picture even when "AUTO" is selected.

FRAME: "Frame still" is always selected. Select this setting when small text or fine patterns cannot be seen clearly even when "AUTO" is selected.

3 **Exit this mode.**
 Press ACTION twice.

Selecting TV MODE

Set the screen display style for wide-screen video material playback.

a Do steps 1 and 2 on front page.

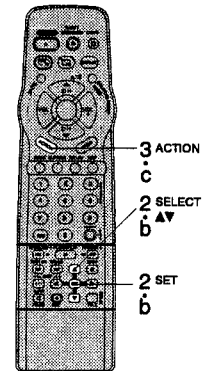
b **Set TV MODE.**
 1) Press **Δ** to select TV MODE.
 2) Press SET repeatedly to select setting.

Pan & Scan: Wide screen video data is played in Pan & Scan style (left and right of screen is trimmed). (Factory preset)

* Video data not formatted in Pan & Scan will play in letterbox style.

Letterbox: Wide screen video data is played in Letterbox style (top and bottom of screen has black margin).

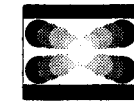
c **Exit this mode.**
 Press ACTION twice.



Example
 • Pan & Scan (Factory preset)



• Letterbox



SERVICE NOTES

SIMPLIFIED FAULT FINDING DATA

Simplified Self-Diagnostic System facilitates finding the cause of the fault. VCR and DVD fault code and communication for I²C bus code will be displayed on TV screen.

The Simplified Fault finding data is stored in the Memory IC (IC6004). This data is cleared after it is displayed and then, the POWER button is pressed back on.

Note:

Before performing, set the unit to TV mode by pressing DVD/TV button on the remote control. Then, turn off the POWER.

1. With power turned off, press FF and REW buttons on unit together for over 3 seconds.

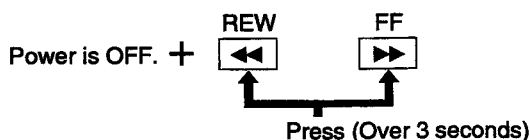


Fig. 1-1

2. TV power goes on and the unit goes into service mode. The following fault codes will be displayed.

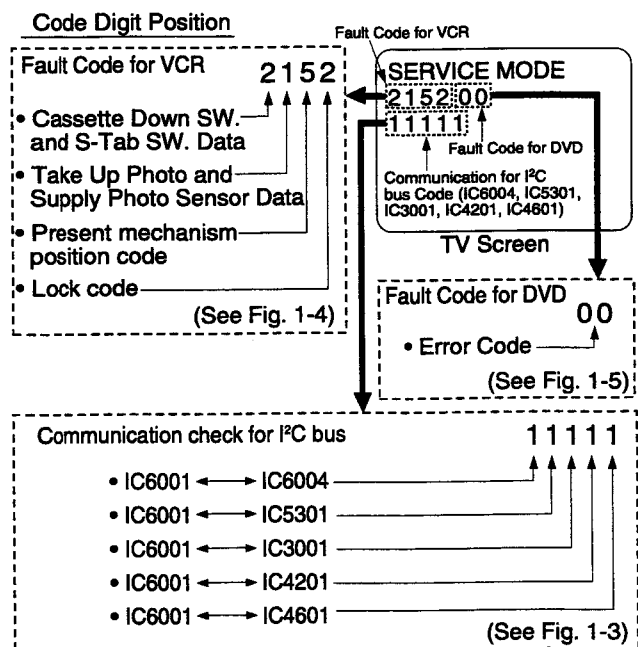


Fig. 1-2

(Communication check for I²C bus)

Explanation of Codes	Code No.			
Communication check for I ² C bus (IC6001↔IC6004) ---- NG OK	0 1			
Communication check for I ² C bus (IC6001↔IC5301) ---- NG OK		0 1		
Communication check for I ² C bus (IC6001↔IC3001) ---- NG OK			0 1	
Communication check for I ² C bus (IC6001↔IC4201) ---- NG OK				0 1
Communication check for I ² C bus (IC6001↔IC4601) ---- NG OK				0 1

Fig. 1-3

(Fault Code for VCR)

Explanation of Codes	Code No.			
S-Tab SW. Data • S-Tab SW. is off. • S-Tab SW. is on.	1 2			
Take Up and Supply Photo Sensor Data • No light detected at either sensor. • Take Up Photo Sensor detected at beginning of tape. • Supply Photo Sensor detected at end of tape. • Light detected at both sensors.		1 2 3 4		
Present Mechanism Position Code Mechanism Position is indicated. (Refer to Fig. 1-6.)			1 2 3 4 5 6 7 8 9 A B C D	
Lock Code (See Note) • VCR is not in shut-off condition. • Reel lock. • Cylinder lock. • Exceeds loading/unloading time. (Mechanism Lock) • Exceeds Cassette loading/unloading time. (Cassette Lock) Tape Unloading (direction) Tape Loading (direction)				0 1 2 3 1 2 4 4

Fig. 1-4

Note:

When 1 to 4 listed in Lock code occurs, the VCR stops and all VCR function buttons except for power become non-operational.

(Fault Code for DVD)

Descriptions	Code No.
No problem found	00
Tracking Error	01
Focus Error	02
Spindle Motor Error	03
Laser Error	04
Traverse Motor Error	05
Loading Motor Error	06
Unknown Error	07
Advanced Disc Servo Control Communication Error	08
Optical Disc Control Communication Error	09
Front End Processor Communication Error	0A

Fig. 1-5

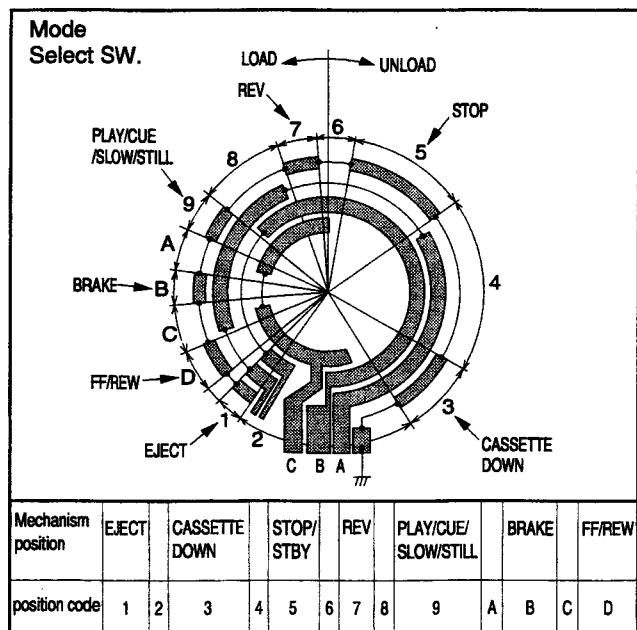


Fig. 1-6

- Press any operation button except for POWER and OPEN/CLOSE on either the unit, or the remote to detect that a key has been pressed. The 1st digit changes to "0" only when key is detected.

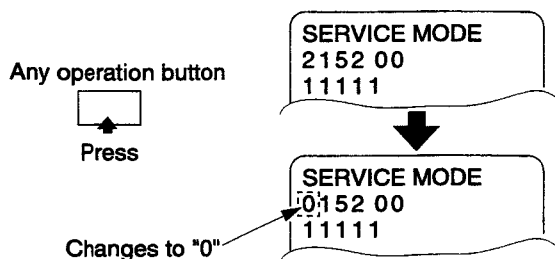


Fig. 1-7

SELF-DIAGNOSTIC TEST FUNCTION FOR DVD

This unit has a Self-Diagnostic function which detects a problem or malfunction within the unit and displays its corresponding Error code on TV Screen.

How to enter DVD Self-Diagnostic mode

- Insert a DVD disc into the DVD Unit.
- Set the unit to DVD mode. Then, press STOP button to stop playback.

Note:

Do not let a DVD play during DVD Self-Diagnostic mode.

- Press and hold STOP, PLAY and VOL DOWN buttons of VCR operation panel of the unit together over 5 seconds with no cassette inserted. The adjustment overlay will appear on the TV screen.

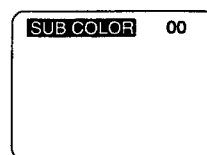


Fig. 2-1

- Press DISPLAY key on the remote control to enter DVD Self-Diagnostic mode. Then, press "1" key on the remote control. The DVD Self-Diagnostic Test function will start.

Note:

If "2" key is pressed, the firmware version of DVD Drive (A number of 10 figures) is displayed.

If "3" key is pressed, the firmware version of DVD Decoder Block (A number of 10 figures) is displayed.

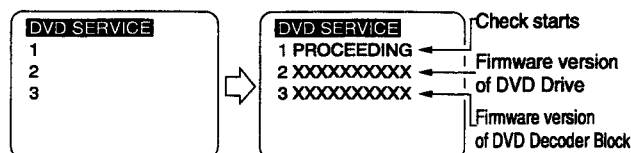


Fig. 2-2

- After a few minutes (approx. 1~5 minutes), the check results will appear on TV screen.

- If no error detected, "COMPLETED" will appear as shown in Fig. 2-3. Be sure to press Power OFF to end. Then, press Power ON again and remove a DVD from the DVD Unit.

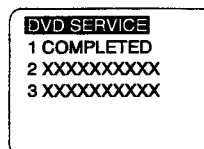


Fig. 2-3

- If something error is detected, 4 digit for Error Code will appear as shown in Fig. 2-4.

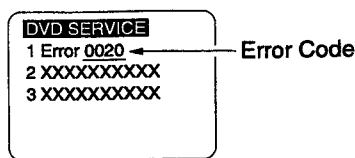


Fig. 2-4

Error Code

No.	Error Code	Explanation of cause
1	0001	Gate Array Read/ Write Error
2	0002	AV Decoder Error
3	0004	Disc Read Error
4	0008	DRAM Error
5	0010	EEPROM Error
6	0020	Data Transmission Error
7	4000	Optical Disc Control Error
8	2000	Advanced Disc Servo Error
9	8000	Front End Processor Error
10	0200	Spindle Motor Error
11	0400	Laser Error
12	0100	Focus Error
13	0800	Traverse Error
14	1000	Loading Error

Note:

When more than one error is detected, the sum total of each Error Code will appear with the hexadecimal value.

(For example)

If Disc Read Error (Error Code: 0004) and DRAM Error (Error Code: 0008) are detected, "000C" is displayed on the TV Screen.

HOW TO UPDATE THE FIRMWARE OF DVD

It is possible to update the firmware version of DVD Drive and the DVD Decoder Block using each Firmware Disc for DVD Drive and DVD Decoder Block.

How to update the firmware of DVD Drive:

1. Confirm the firmware version of DVD Drive. Refer to "SELF-DIAGNOSTIC TEST FUNCTION FOR DVD," page 1-12.
2. Set the unit to DVD mode.
3. Press OPEN/CLOSE button to open the tray. Then, place the Firmware Disc for DVD Drive on the tray.
4. Turn off the power. (The tray will close automatically.) Then, turn on again. Updating will begin as shown.

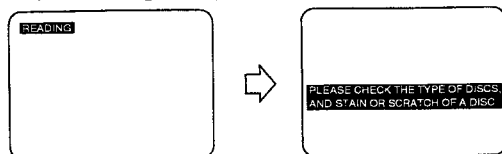


Fig. 3

5. After approx. 1 minute, the tray will open automatically.

Note:

If the tray has still not opened after 2 minutes, updating was unsuccessful. In this case, repeat above steps from step 1.

6. Remove the Firmware Disc from the tray. Then, turn off the power. Updating is complete.
7. Confirm that the firmware version of DVD Drive is changed to the number of the Firmware Disc.

How to update the firmware of DVD Decoder Block:

1. Confirm the firmware version of DVD Decoder Block. Refer to "SELF-DIAGNOSTIC TEST FUNCTION FOR DVD," page 1-12.
2. Set the unit to DVD mode.
3. Press OPEN/CLOSE button to open the tray. Then, place the Firmware Disc for DVD Decoder Block on the tray.
4. Turn off the power. (The tray will close automatically.) Then, turn on again. Updating will begin as shown in Fig. 3.
5. After approx. 1 minute, the tray will open automatically.

Note:

If the tray has still not opened after 2 minutes, updating was unsuccessful. In this case, repeat above steps from step 1.

6. Remove the Firmware Disc from the tray. Then, turn off the power. Updating is complete.
7. Confirm that the firmware version of DVD Decoder Block is changed to the number of the Firmware Disc.

LENS CLEANING

For cleaning, wipe the pickup softly with the new cotton cloth damped with ethylalcohol. Never wipe it strongly or the wrong influence will have on the glass coating of the pickup. After cleaning, be sure to check no dirt or dust on the lens surface.

IC6001 REPLACEMENT NOTE

When replacing IC6001 on the Main C.B.A., be sure to discharge C6001 (Backup capacitor) with a Resistor (ERDS2TJ102: 1K ohm/0.25W, or same value) over 3 seconds.

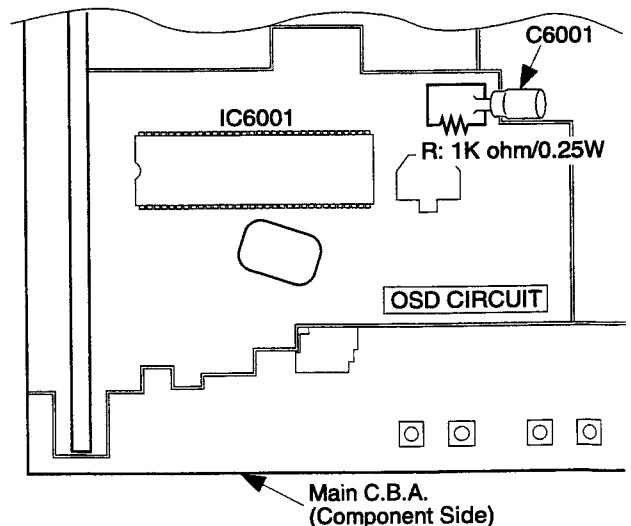


Fig. 4

SERVICE POSITION

The Basic Service Position does not require the use of Extension Cables. However, for more extensive servicing, Extension Cables should be used.

1. Basic Service Position

Service Position (1)

1. Remove Rear Cover, VCR Unit, Top Shield Plate Ass'y.
2. Place VCR Unit and DVD Sub C.B.A. as shown.

Service Position	Purpose
Service Position (1)	Mechanism check Mechanical adjustment Electrical adjustment DVD Sub C.B.A. check
Service Position (2)	Main C.B.A. check TV Main C.B.A. check

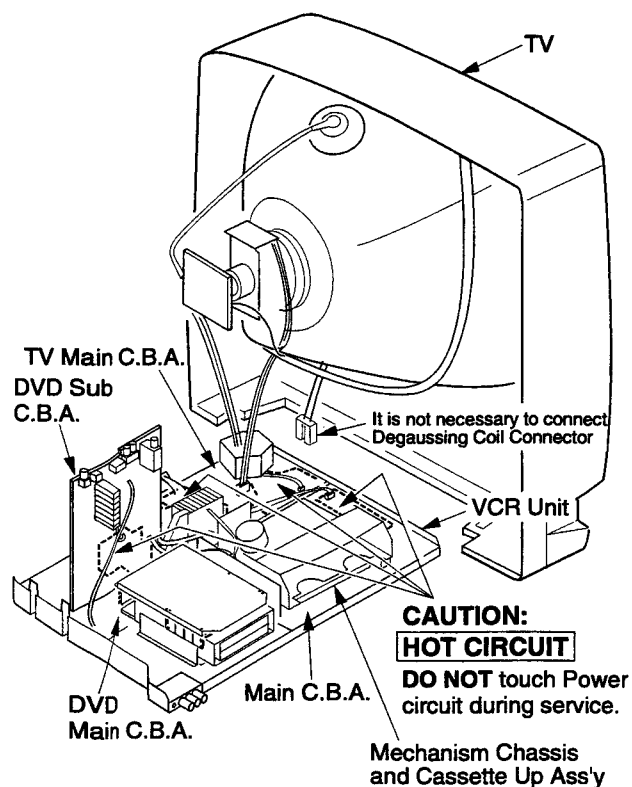


Fig. 5-1

CAUTION:

HOT CIRCUIT (Primary circuit) exists on the Main C.B.A., TV Main C.B.A., and DVD Sub C.B.A. Use extreme care to prevent accidental shock when servicing.

Note:

When disassembling/assembling, refer to "Disassembly/Assembly Procedures of Cabinet" section.

Service Position (2)

1. Remove Rear Cover, VCR Unit and Top Shield Plate Ass'y.
2. Remove Main C.B.A., TV Main C.B.A., Operation C.B.A. and DVD Sub C.B.A. from the frame.
3. Place Main C.B.A., TV Main C.B.A., Operation C.B.A. and DVD Sub C.B.A. as shown. In order to stabilize TV Main C.B.A., place it on any thin object, such as a Notebook etc.

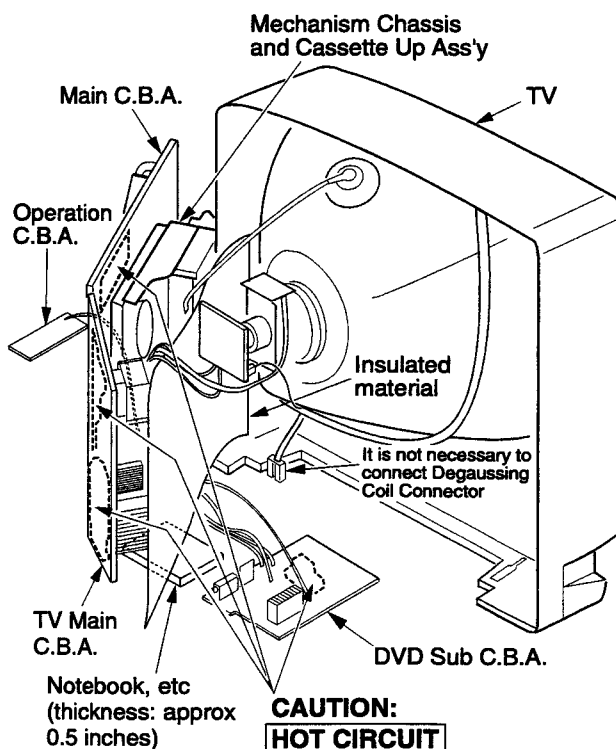


Fig. 5-2

2. Service Position with Extension Cable Kit

In Service Position with Extension Cable Kit, mechanism check from the Bottom Side of Mechanism Chassis and Capstan Stator Unit (Capstan Motor Drive, Loading Motor Drive Circuit) check with power on condition can be performed.

Service Position

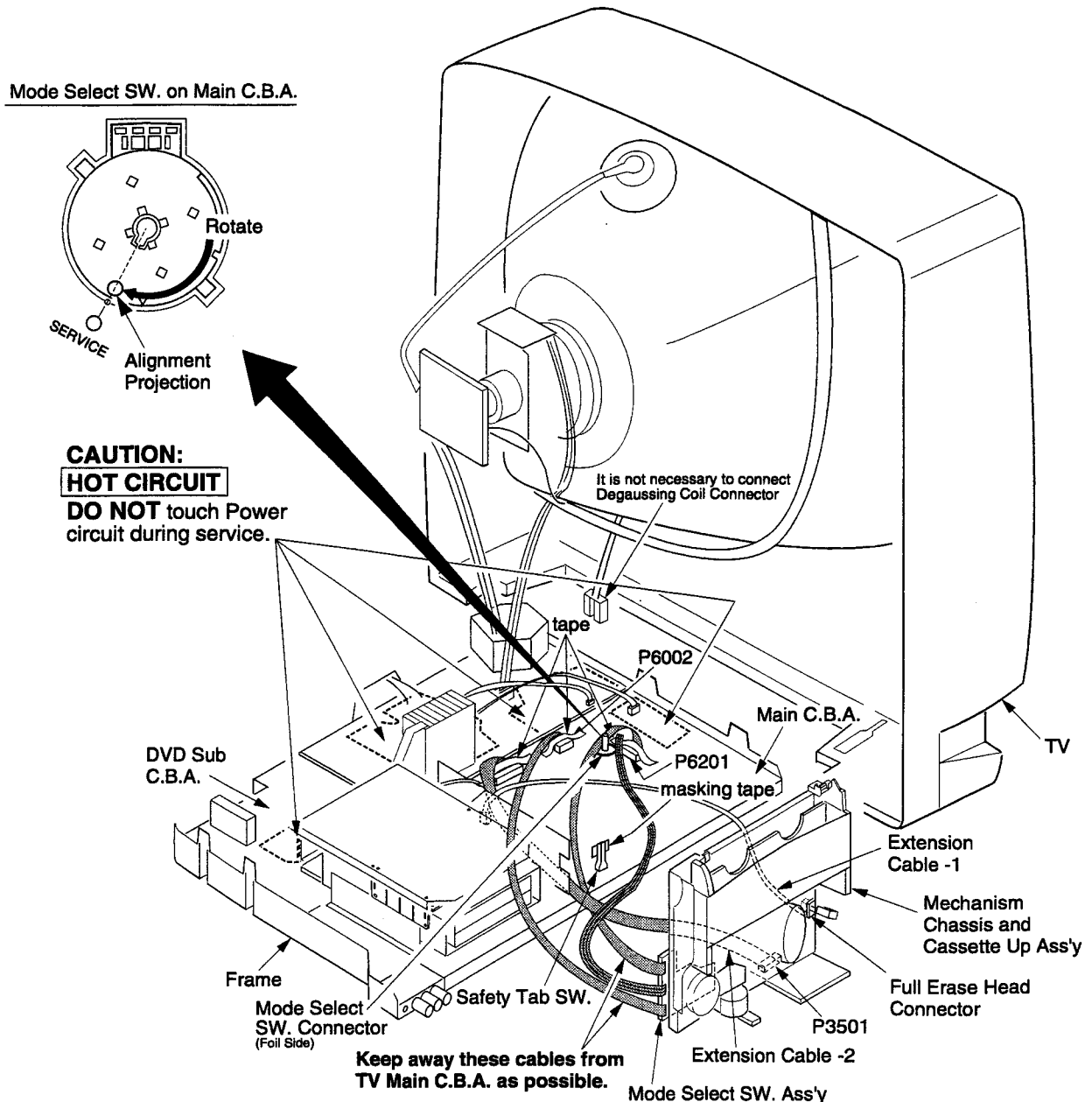


Fig. 5-3

CAUTION:

HOT CIRCUIT (Primary circuit) exists on the Main C.B.A., TV Main C.B.A., and DVD Sub C.B.A. Use extreme care to prevent accidental shock when servicing.

Note:

When disassembling/assembling, refer to "Disassembly/Assembly Procedures of Cabinet" section.

Extension Cable Kit (VUZS0002)

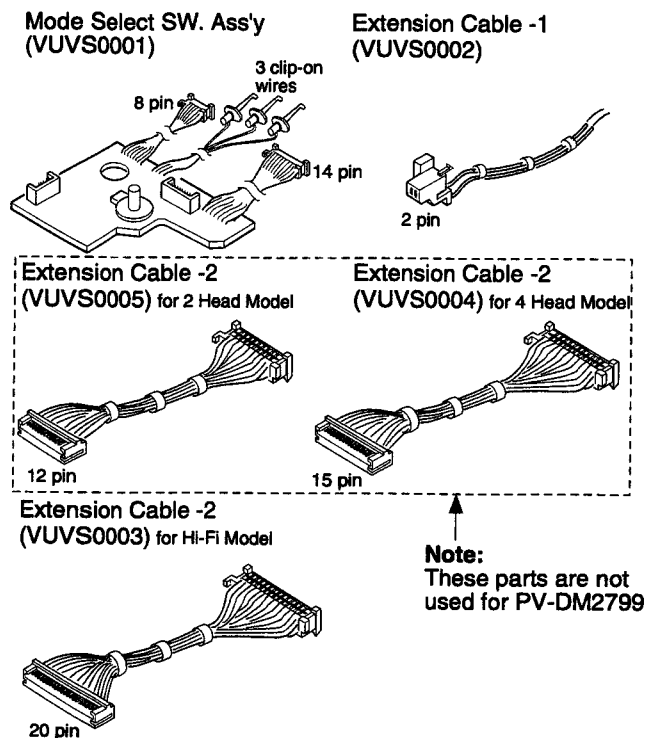


Fig. 5-4

Note:

3 types of Extension Cable -2 are included in this kit. Since there is a difference in the number of P3501 Head Amp C.B.A. pins between 2 Head, 4 Head, and Hi-Fi models, be sure to use the proper cable.

How to place the unit into Service Position with Extension Cables

1. Remove Rear Cover, VCR Unit, Top Shield Plate Ass'y, Mechanism Chassis, and Cassette Up Ass'y.
2. Connect the Extension Cables as follows:

Extension Cable -1: Full Erase Head Connector on the Mechanism Chassis Unit ~ P4001 on the Main C.B.A.

Note: No change in performance if pins are reversed.

Extension Cable -2: P3501 on the Head Amp C.B.A. ~ P3003 on the Main C.B.A.

Mode Select SW. Ass'y: a) 3 Clip-on Wires ~ Mode Select SW. Connector on the Main C.B.A.

Red Wire ~ TP6021
Orange Wire ~ TP6022
Yellow Wire ~ TP6023

b) 8 Pin Connector ~ P6002 on the Main C.B.A.

c) 14 Pin Connector ~ P6201 on the Main C.B.A.

d) Set Mode Select SW. on the Mode Select SW. Ass'y to EJECT position and install onto Mechanism Chassis.

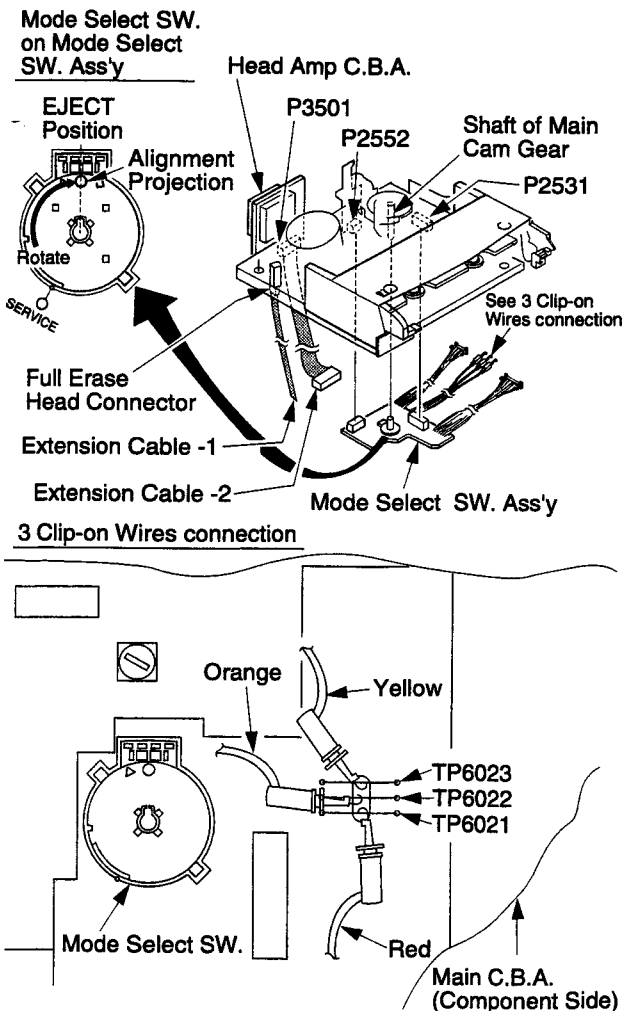


Fig. 5-5

3. Place the VCR Unit as shown.
4. Secure the Extension Cables with tape as shown. When recording, cover the Safety Tab SW. with masking tape to turn this SW. on.

Note:

To avoid damaging the connectors on Main C.B.A., it is necessary to secure connectors with tape as shown.

5. Set Mode Select SW. on the Main C.B.A. to Service Position.
 6. Plug the AC plug into an AC outlet.
 7. Insert a cassette.
- The power comes on, the tape is fully loaded, and the unit goes into the STOP Mode.
8. Place a jumper between TP6001 and GND to place the unit in Service Mode.
 9. Check and/or repair the unit.
 10. Press the STOP/EJECT button to eject the cassette.

Note:

When inserting a cassette again, remove the jumper between TP6001 and GND and insert the cassette. Then, reconnect the jumper.

11. After servicing, remove the jumper between TP6001 and GND to release the unit from Service Mode.

CAUTION:

HOT CIRCUIT (Primary circuit) exists on the Main C.B.A., TV Main C.B.A., and DVD Sub C.B.A. Use extreme care to prevent accidental shock when servicing.

Note:

When disassembling/assembling, refer to "Disassembly/Assembly Procedures of Cabinet" section.

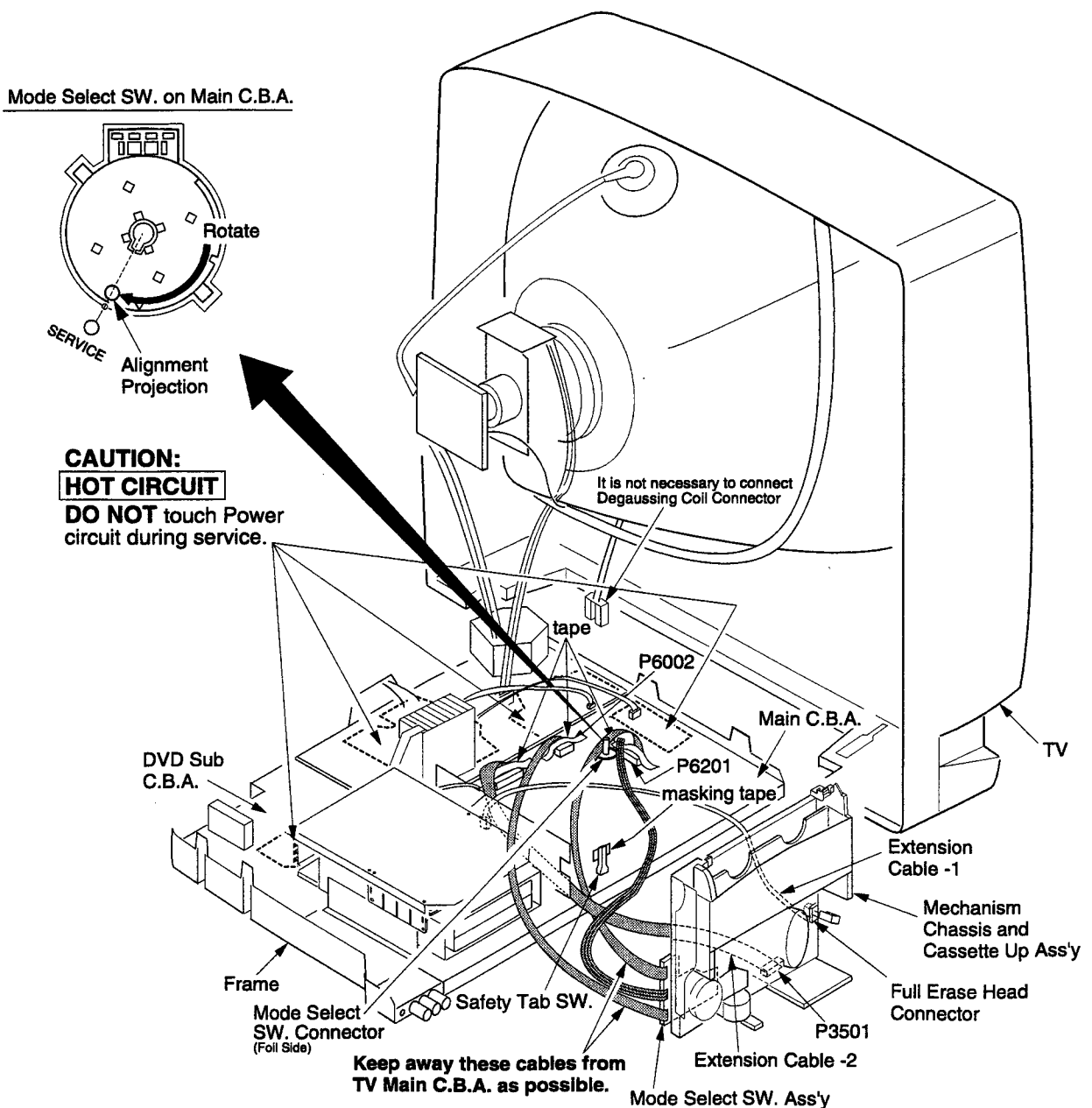


Fig. 5-6

HOT CIRCUIT

Primary circuit exists on the Main C.B.A., TV Main C.B.A., and DVD Sub C.B.A.

This circuit is identified as "HOT" on the C.B.A. and in the Service Manual. Use extreme care to prevent accidental shock when servicing.

SERVICE MODE

In order to inhibit detection of the Supply & Takeup Photo Transistors, Reel Sensor, and Cylinder Lock, place a jumper between TP6001 and GND.

In this mode, Mechanism movement can be confirmed. When removing Cassette Up Ass'y, it can be confirmed without a cassette.

To release from this mode, remove the jumper between TP6001 and GND.

CAUTION FOR INSTALLATION OF VCR UNIT

CAUTION:

Opener Lever may be damaged when VCR Unit is installed, with Cassette Door-Lid and Opener Lever of Cassette Up Ass'y set incorrectly.

Install the VCR Unit as follows:

1. Swing the Cassette Door-Lid all the way open until the Cassette Door tab clears the Opener Lever.
2. Make sure that all guide tabs are aligned properly. Then, press the VCR Unit straight in.

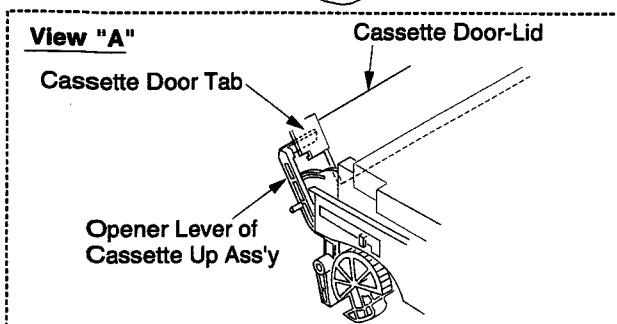
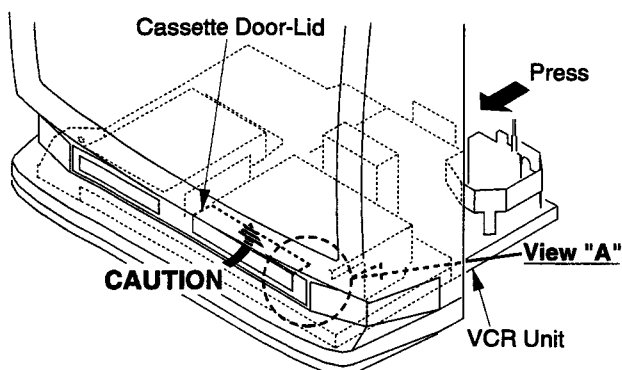


Fig. 6

HOW TO INITIALIZE MEMORY IC

After the Memory IC (IC6004) or Main C.B.A. is replaced, be sure to set the Default value to Memory IC as shown in "Memory IC Reference Table" below.

1. Press and hold STOP, PLAY and VOL DOWN buttons of VCR operation panel of the unit together over 5 seconds with no cassette inserted. The adjustment overlay will appear to Enter EVR Adjustment mode.

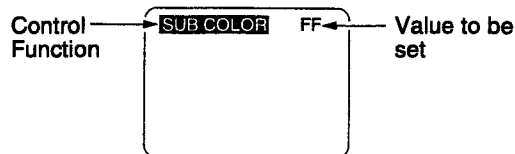


Fig. 7-1

2. Set the Default value of all Control functions using a remote control as shown in "Memory IC Reference Table" below.

Note:

For Selecting Control functions and setting Default value, refer to "How to Enter EVR Adjustment Mode" and "How to Enter EVR PG Shifter Adjustment Mode" in Electrical Adjustment procedures.

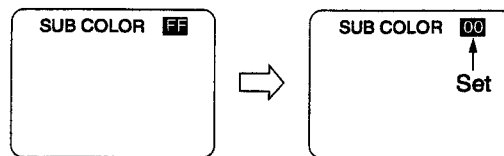


Fig. 7-2

3. Press and hold STOP, PLAY, and VOL DOWN buttons of VCR operation panel of the unit together over 5 seconds again or press the POWER button OFF to release EVR Adjustment Mode. The Default value will be written to Memory IC (IC6004).
4. Perform all EVR Adjustments. (Refer to "EVR Adjustment with the Remote Control" in Electrical Adjustment procedures.)

Memory IC Reference Table

Control functions	Address	Range	Default
SUB COLOR	00	C0 - FF, 00 - 3F	00
SUB TINT	01	E0 - FF, 00 - 1F	00
SUB BRIGHT	02	C0 - FF, 00 - 3F	F0
CONTRAST	03	C1 - FF, 00	00
SUB SHARPNESS	04	E0 - FF, 00 - 1F	E8
R CUT -OFF	05	00 - 7F	1E
G CUT -OFF	06	00 - FD	3C
B CUT -OFF	07	00 - FD	3C
G DRIVE	08	00 - 7F	40
B DRIVE	09	00 - 7F	40
SUB CONTRAST	0A	00 - 0F	06
H CENTER	0B	00 - 0F	08
SUB V	0C	00 - 03	00
V SIZE	0D	00 - 7F	40
V POSITION	0E	00 - 7F	40
VV COLOR	12	C0 - FF, 00 - 3F	00
VV TINT	13	E0 - FF, 00 - 1F	00
VV SHARPNESS	14	E0 - FF, 00 - 1F	E3
PG SHIFTER	15	01 - FD	80
DVD COLOR	18	C0 - FF, 00 - 3F	00
DVD TINT	19	E0 - FF, 00 - 1F	00
DVD SHARPNESS	1A	E0 - FF, 00 - 1F	E8

Note:

Address is not displayed on the TV screen. Other Addresses except above are not used.

METHOD FOR LOADING/ UNLOADING OF MECHANISM

(Manual Method)

Turn the Main Cam Gear counterclockwise (for loading) or clockwise (for unloading) using needlenose pliers etc.

Note:

Do not use this method if Mechanism is jammed or locked.

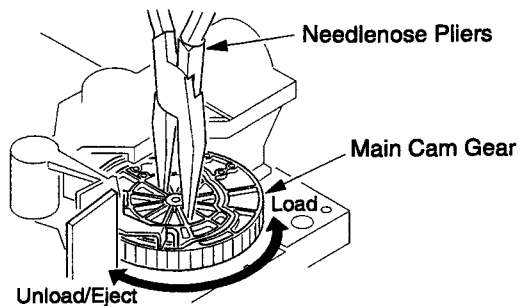


Fig. 8-1

(Electrical Method)

Remove the solder as shown and apply +10.0 VDC Power Supply (DC + to Portion "a," DC - to Portion "c").

Note:

Be careful not to let the DC Power Supply Unit GND contact the chassis GND. This may damage the Loading Motor Drive IC (IC 2501).

Be sure to apply DC + to Portion "a" of Motor P.C.B.

If DC + is applied to Portion "b", the Loading Motor Drive IC (IC2501) may be damaged.

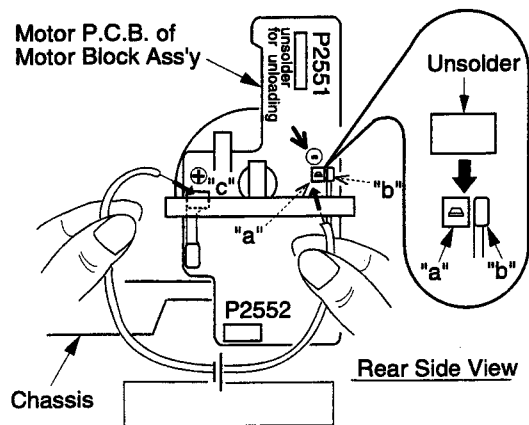


Fig. 8-2

Note:

Do not forget to solder Portions "a" and "b" after loading/unloading operation is completed.

When loading without a cassette, press Portion "a" on both sides of the Holder Unit of Cassette Up Ass'y so that the Levers clear the Tabs and Holes.

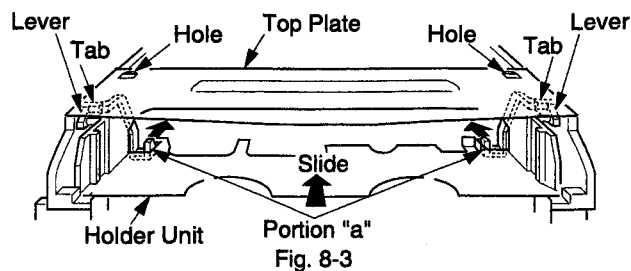


Fig. 8-3

HOW TO REMOVE A JAMMED TAPE

Manual Method

When a tape jam is encountered, check the tape loading condition and use the following procedure to remove a tape jam.

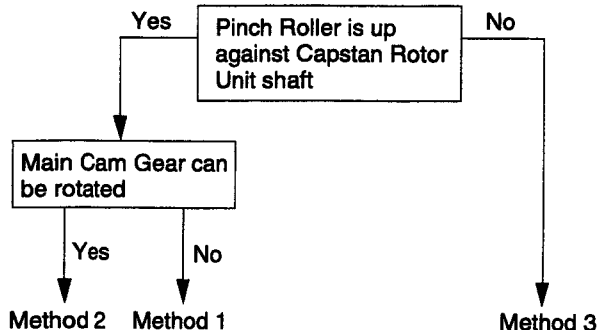


Fig. 9-1

Method -1:

1. While releasing 2 Locking Tabs (A) of Opener Piece, pull the Opener Piece up as far as you can.
2. Move the pin of Pinch Arm Unit out of the groove of the Main Cam Gear so that the Pinch Roller is separated from the shaft of the Capstan Rotor Unit.

Rear Side View

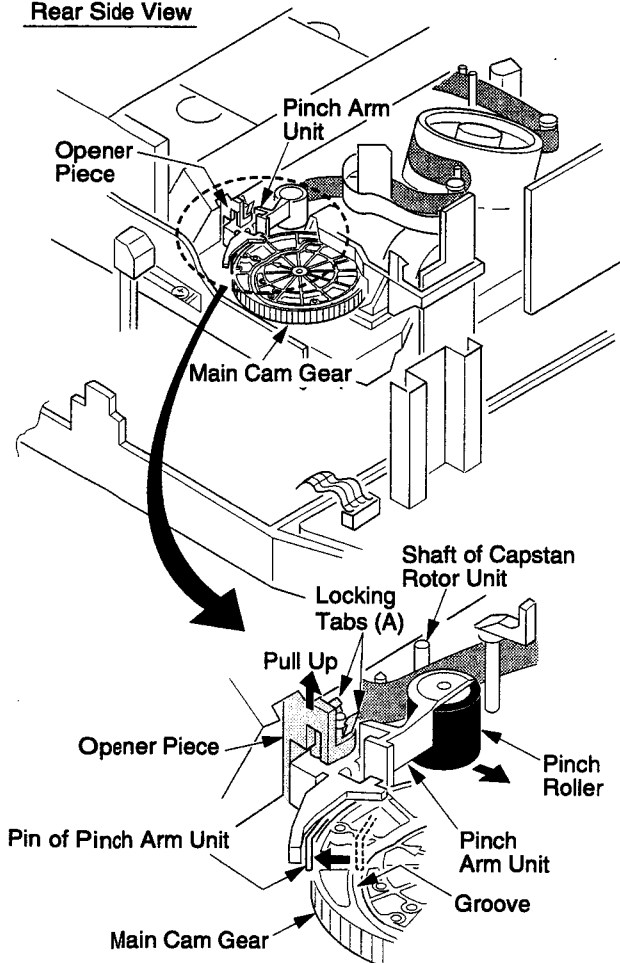


Fig. 9-2

3. Remove the tape from the tape path.
4. Rewind the tape into the cassette by rotating the Center Clutch Unit counterclockwise.
5. Unhook Spring (A) of the Drive Rack Unit.
6. Remove Screw (A).
7. Lift the Drive Rack Unit up so that the slot clears the guide tab. While pulling the Drive Rack Unit out far enough so that it clears the Drive Rack Arm, slide the Drive Rack Unit as indicated by the arrow to remove the cassette tape from the Cassette Up Ass'y.
8. Check the cause of mechanical trouble and repair.

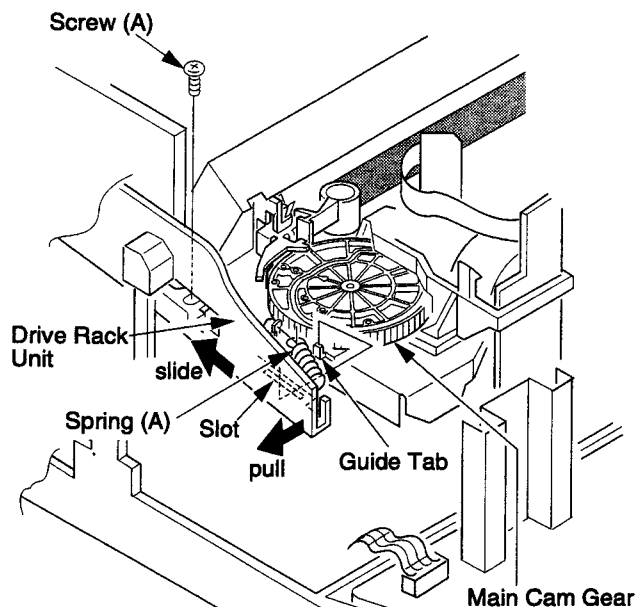


Fig. 9-3

Method -2:

1. Rotate Main Cam Gear clockwise with needlenose pliers, etc. so that the Pinch Roller is separated from the shaft of the Capstan Rotor Unit.
2. Perform Step 3 through Step 8 of Method -1.

Method -3:

1. Perform Step 3 through Step 8 of Method -1.

Note:

After repairing mechanical trouble, make sure that all gear alignments are correct, especially the Wiper Arm Unit and Drive Rack Unit of Cassette Up Ass'y. (Refer to "EJECT Position confirmation" in Disassembly/Assembly Procedures of Mechanism.)

Electrical Method

Electrical method can only be performed when the mechanism is moved by rotating the Main Cam Gear.

CAUTION:

If loading does not start in approx. 2 seconds after DC Power Supply is applied, DO NOT continue to apply DC Power Supply. Instead, perform "Manual Method."

1. Remove the solder as shown and apply +10.0 VDC Power Supply (DC + to Portion "a," DC - to Portion "c").
2. When the Loading Posts reach the fully unloaded position, remove the Power Supply.

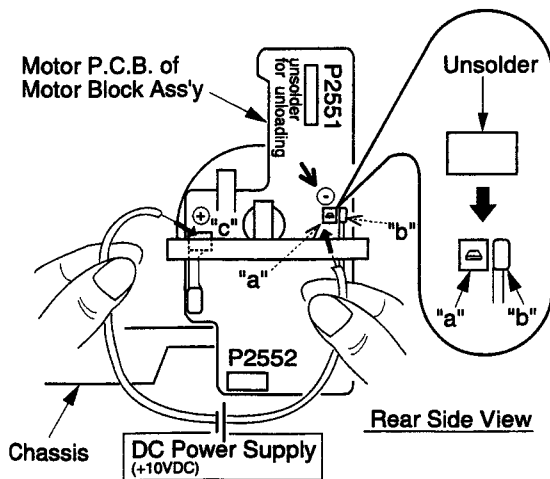


Fig. 10

Note:

Be careful not to let the DC Power Supply Unit GND contact the chassis GND. This may damage the Loading Motor Drive IC (IC 2501).

Be sure to apply DC + to Portion "a" of Motor P.C.B.

If DC + is applied to Portion "b", the Loading Motor Drive IC (IC2501) may be damaged.

3. Rewind the tape into the cassette by turning the Center Clutch Unit counterclockwise.
4. Eject the cassette by applying +10.0VDC Power Supply again.
5. After completing the removal procedure, solder Portion "a" and Portion "b."

WIRE AND LEAD POSITION DIAGRAM

After servicing, make sure that all wires, leads, and claspers are placed in their original position. It is important for the best operation of the unit.

Note:

**No lead wires or flat cables should touch any heating parts or the Heat Sink Plate.
Use extreme care especially for followings.**

Anode Lead:

DO NOT touch the Picture Tube.

Speaker Connector Leads:

DO NOT touch Power circuit on Main C.B.A.

Connector Leads and Deflection Yoke

Connector Leads:

DO NOT touch Heat Sink Plate on TV Main C.B.A.

Connector Leads Degaussing Coil.

Connector Leads:
DO NOT touch Heat Sink Plate on DVD Sub
C.B.A.

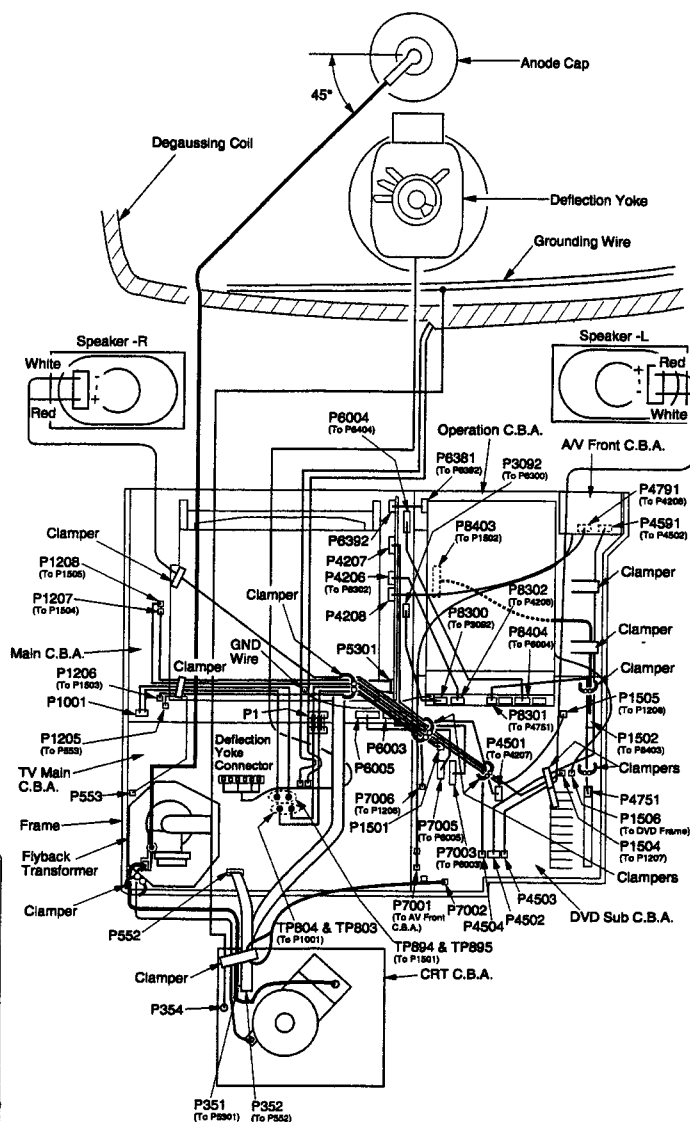
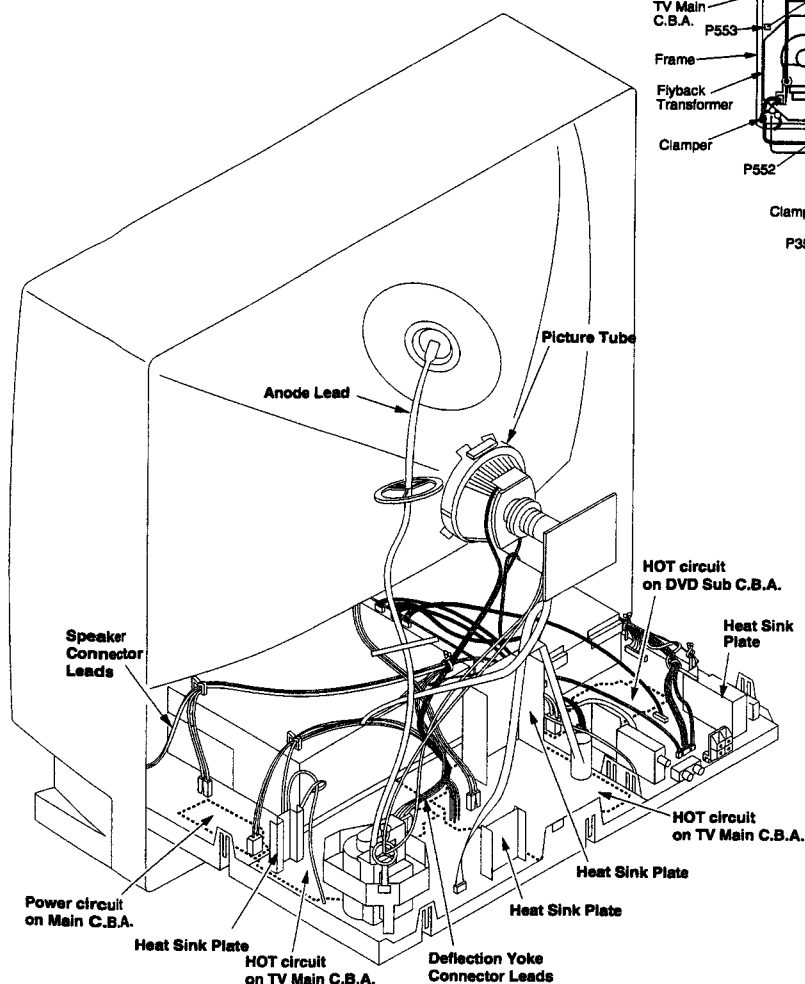


Fig. 11
1-22

DEFEATING THE AUTO TRACKING

To defeat the Auto Tracking Function, place the instrument in the STOP mode and place a jumper between TP6003 and TP6009 on the Main C.B.A. The tracking will be placed in the neutral position.

HOW TO SET TRACKING TO THE NEUTRAL POSITION

Ejecting the cassette tape and then reinserting it will reset the tracking to the Neutral position.

CYLINDER ROTATION IN STOP MODE

The cylinder will continue to rotate for approximately 5 minutes after the STOP button is pressed in Play mode etc. Eject the tape in order to stop the cylinder.

BLACK SCREWS ON THE CHASSIS

Black Screws are used on the Mechanism Chassis to identify screws that require adjustment.

HOW TO RESET ALL COMBINATION VCR MEMORY FUNCTIONS

To reset (clear) the select language, channel auto set and set clock functions to their initial power on condition (power on, no cassette inserted), hold down the PLAY and FF buttons on the unit together for more than 5 seconds. Power will shut off.

HOW TO CONFIRM AUTO CLOCK SET FEATURE

1. Connect an RF cable from the output of one unit to the input of the test unit.
2. Select corresponding RF channels.
3. Playback a recording of P.B.S. channel including clock set data and confirm this feature.

VARIABLE VOLTAGE ISOLATION TRANSFORMER

An Isolation Transformer should always be used during the servicing of Combination VCR whose chassis is not isolated from the AC power line. Use a transformer of adequate power rating as this protects the technician from accidents resulting in personal injury from electrical shocks. It will also protect Combination VCR from being damaged by accidental shorting that may occur during servicing.

Also, when troubleshooting the above type of Power Supply Circuit, a variable isolation transformer is required in order to increase the input voltage slowly.

SPECIAL NOTE

All integrated circuits and many other semiconductor devices are electrostatically sensitive and therefore require the special handling techniques described under the "ELECTROSTATICALLY SENSITIVE (ES) DEVICES" section of this service manual.

REPLACEMENT PROCEDURE FOR LEADLESS (CHIP) COMPONENTS

The following procedures are recommended for the replacement of the leadless components used in this unit.

1. Preparation for replacement
 - a. Soldering Iron
Use a pencil-type soldering iron that uses less than 30 watts.
 - b. Solder
Eutectic Solder (Tin 63%, Lead 37%) is recommended.
 - c. Soldering time
Do not apply heat for more than 4 seconds.
 - d. Preheating
Leadless capacitor must be preheated before installation. – (266°F ~ 302°F)
(130°C ~ 150°C) for about two minutes.

Note:

- a. Leadless components must not be reused after removal.
- b. Excessive mechanical stress and rubbing of the component electrode must be avoided.

2. Removing the leadless component

Grasp the leadless component body with tweezers and alternately apply heat to both electrodes. When the solder on both electrodes is melted, remove the leadless component with a twisting motion.

Note:

- a. Do not attempt to lift the component off the board until the component is completely disconnected from the board by a twisting action.
- b. Be careful not to break the copper foil on the printed circuit board.

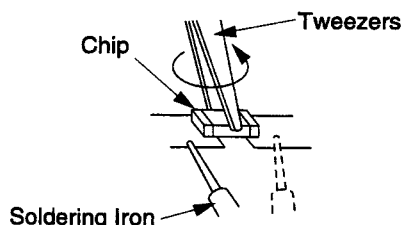


Fig. 12-1

3. Installing the leadless component

- a. Presolder the contact points on the circuit board.

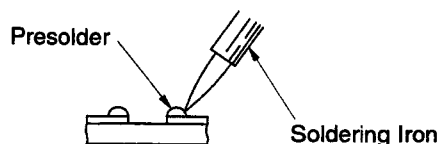


Fig. 12-2

- b. Press the part downward with tweezers and solder both electrodes as shown below.

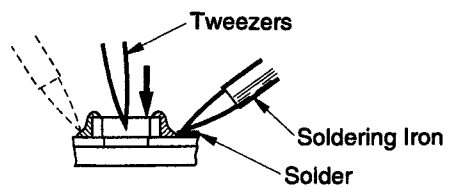


Fig. 12-3

Note:

Do not glue the replacement leadless component to the circuit board.

WHEN REPLACING DVD ASS'Y

1) Before removing DVD Ass'y:

When repairing DVD Ass'y, be sure to set the Traverse Ass'y in the up (stand-by) position.

1. Turn on the power.
2. Press the OPEN/CLOSE button to open the tray. Push the OPEN/CLOSE button again to close.
3. Turn off the power.
4. Disconnect the power plug from the power outlet.

CAUTION:

Do not close the tray manually after disconnecting the power plug from the power outlet with the tray opened. In this case, the traverse is not set in the up (stand-by) position.

2) When removing DVD Ass'y:

Note:

If necessary, remove the some leads on the Top Shield Plate before removing the Top Shield Plate.

1. Remove Rear Cover and VCR Unit. Refer to "Disassembly/Assembly Procedures of Cabinet," page 2-1.
2. Remove 4 Screws (C) and 4 Screws (D). Then, remove the DVD Top Shield Plate.

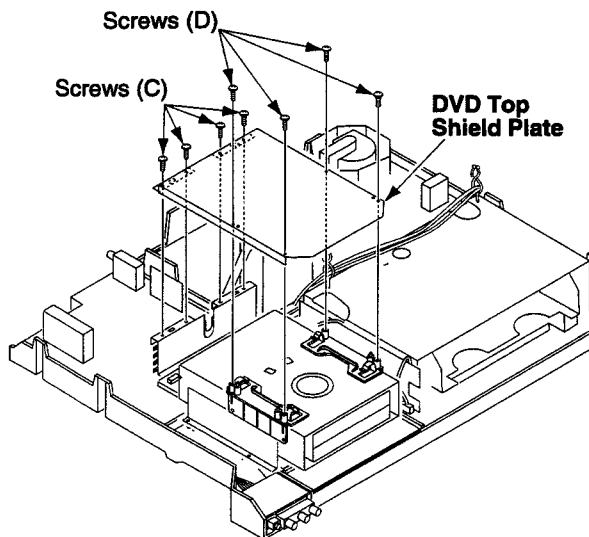


Fig. 13-1

3. Remove 4 Screws (E).
4. Disconnect 5 Connectors P8300, P8301, P8302, P8403 and P8404 to remove both the DVD Ass'y and DVD Wire Clamp from VCR Unit.
5. Remove 4 Screws (F). Then, remove the 2 DVD Wire Clamps.

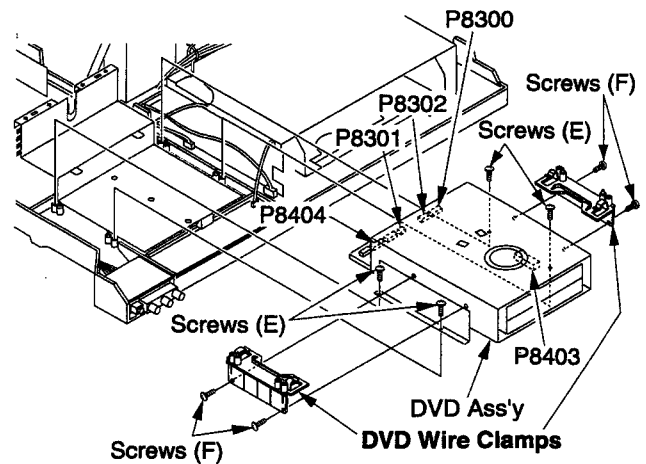


Fig. 13-2

6. Remove 4 Screws (G). Then, remove the Mount Plate L,R.

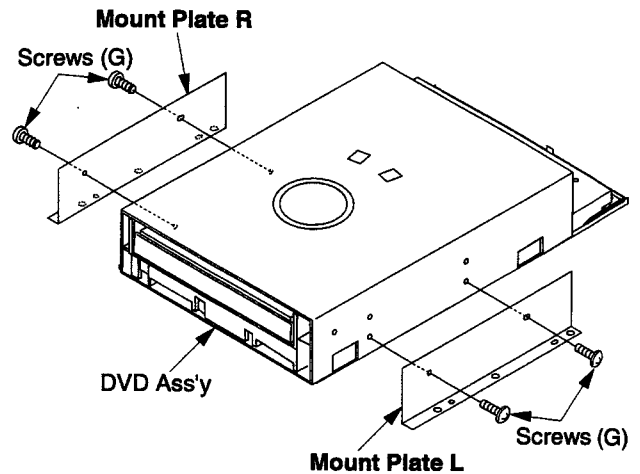


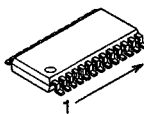
Fig. 13-3

3) After removing DVD Ass'y:

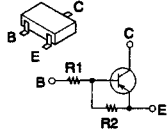
- DO NOT allow the disconnected Connectors to touch other parts.
- DO NOT lose removed parts other than the DVD Ass'y.

IC, TRANSISTOR AND CHIP PART INFORMATION


GENERAL C.B.A./ASS'Y PARTS



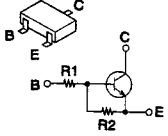
MN3885S, AN3361SB,
AN3328S, LM833M




UN2112 (R1=22K, R2=22K),
DTA124EK (R1=22K, R2=22K),
UN211L (R1=4.7K, R2=4.7K),
DTA143EK (R1=4.7K, R2=4.7K)



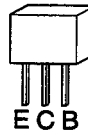
ON3131-R.KT,
ON3131-S.KT



DTC124EK (R1=22K, R2=22K),
UN2212 (R1=22K, R2=22K),
DTC114TK (R1=10K, R2=OPEN),
UN2113, UN2211, UN5112

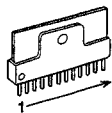


2SD1458, 2SD2259
2SD1858




2SC3311A,
2SA1309A

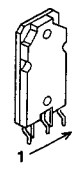
TV MAIN C.B.A.



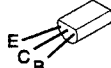
LA7837



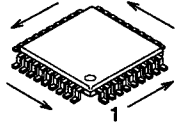
2SC2785,
2SA1175




STR30130



2SC945A, 2SA733,
2SC2482, 2SB1221,
2SD2159

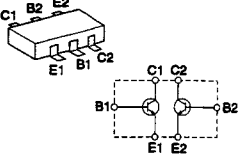


AN5367FB,
AN3479FBP,
AN3962FB-V,
MN102L35GKA2

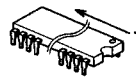


2SD601, 2SD601A,
2SB709, 2SA1576
2SA1037K146R,
2SB709A, 2SC2412KS
2SC2412K146R,
2SC4081T106R,
2SD2097TV2R,
2SD235800A


MAIN C.B.A.



IMX1, XN4501,
HN1C01F-GR

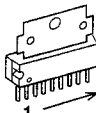


24LC01B/P, AT24C01A10PI,
M24C01-BN6, ST24C01FB6



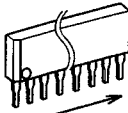
2SC3852,
2SC4533LP.KT,
2SC5130LF608,
2SD2375

HI-FI AUDIO/VIDEO HEAD AMP C.B.A.



AN3809K

HI-FI AUDIO C.B.A.

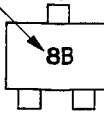


AN7420NT

HOW TO READ THE IDENTIFICATION MARK OF CHIP COMPONENTS.

MARKING	PART NO.	MARKING	PART NO.
A	2SB709	6Q	UN211L
B	2SB709A	8B	UN2212
BR	2SC2412KR	5H	XN4501
BS	2SC2412KS	X1	IMX1
FR	2SA1037KR	04	DTC114TK
FS	2SA1037KS	13	DTA143EK
Y	2SD601	15	DTA124EK
Z	2SD601A	25	DTC124EK
6B	UN2112		

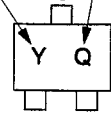
MARKING



UN2212

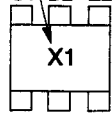
MARKING

hfe classification



2SD601

MARKING



IMX1

HOW TO READ THE VALUES OF THE CYLINDRICAL TYPE CHIP COMPONENTS.



1st 2nd 3rd

The widest color band must be read first for value.

(a) RESISTOR

There are two types (ERD10LLJ... and ERD10TLJ...) of chip parts.

- 1) ERD10LLJ : Refer to above type.
- 2) ERD10TLJ : The narrow color band must be read first for value.

If this part is included in the parts list, be sure that the color band is read properly when servicing.

(b) CAPACITOR

Because of the width of the color bands, the reading direction cannot be specified. However, the color band can be read on either side. Be sure to confirm the value using the schematic diagram.

CAUTION :

Once chip parts are removed, they must not be reused. Always use a new part when installing a chip part.

DISASSEMBLY/ASSEMBLY PROCEDURES

DISASSEMBLY/ASSEMBLY PROCEDURES OF CABINET

Disassembly Flowchart

Perform all disassembly procedures in the order described in the "Disassembly Flowchart" shown below. When reassembling, use the reverse procedure.

CAUTION:

Disconnect AC plug before disassembly.

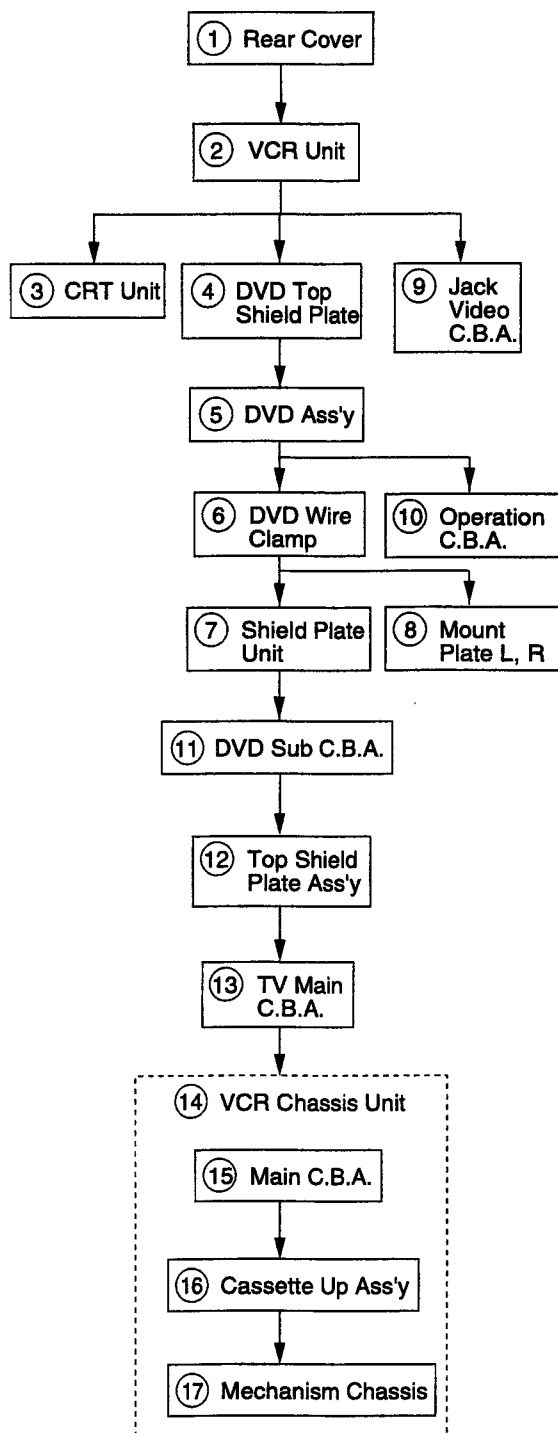


Fig. D1

Rear Cover

Disassembly Procedure

1. Remove 12 Screws (A) and 3 Screws (B). Then, pull the Rear Cover away.

Rear View

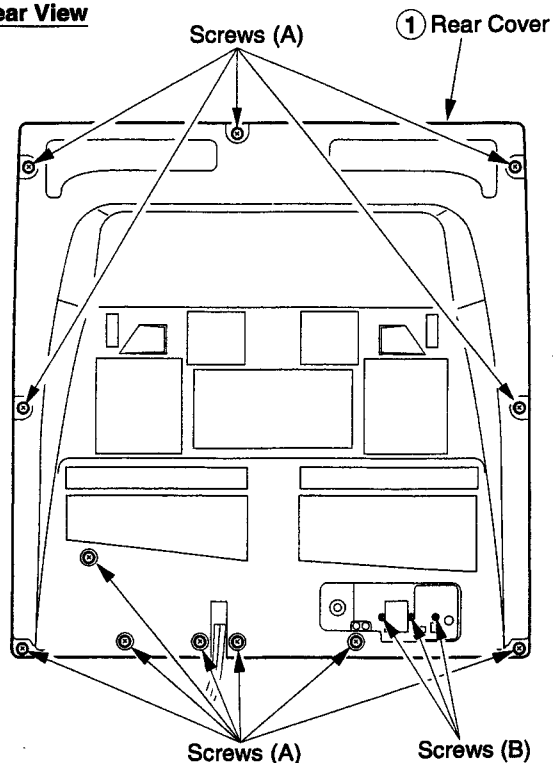


Fig. D2

VCR Unit

Disassembly Procedure

1. Discharge the Anode to the CRT Ground. Then, remove the Anode Cap.
2. Disconnect the Connector P354 from the CRT C.B.A.
3. Disconnect the Connector P7002 of FM Radio Antenna Code from DVD Sub C.B.A.
4. Carefully pull out the CRT C.B.A. from the CRT Unit.
5. Disconnect the Deflection Yoke Connector and Degaussing Coil Connector from the TV Main C.B.A.
6. Disconnect the Connector P4503 and P4504 on the DVD Sub C.B.A., and remove the leads from the clampers.

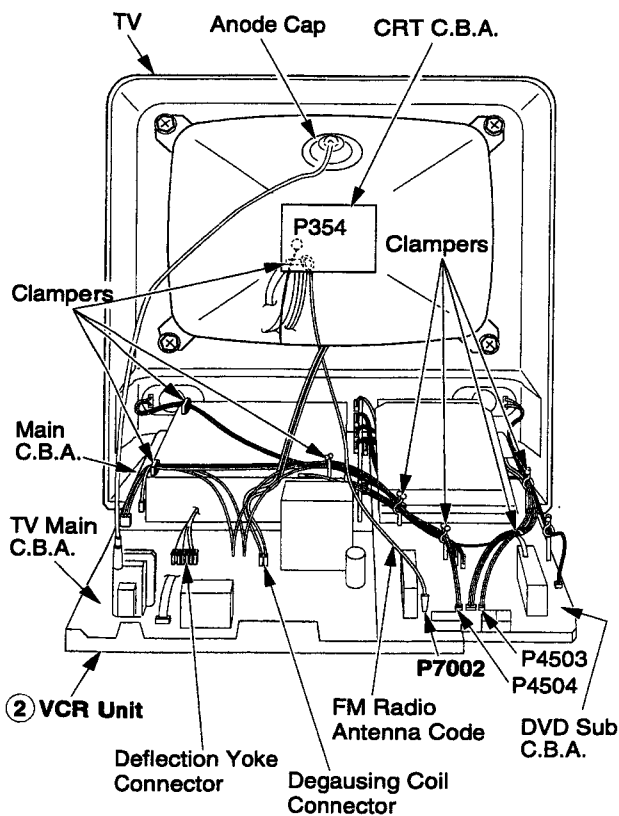


Fig. D3-1

7. Slightly lift up the rear side of the VCR Unit to release 2 Tabs (B).
8. Slide the VCR Unit out as far as it will go. Then, lift up the VCR Unit to release 2 Guide Tabs (A) and remove the VCR Unit all the way out from the TV cavity.

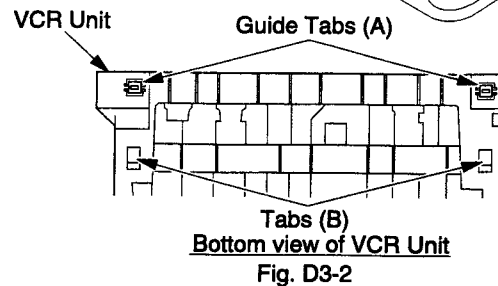
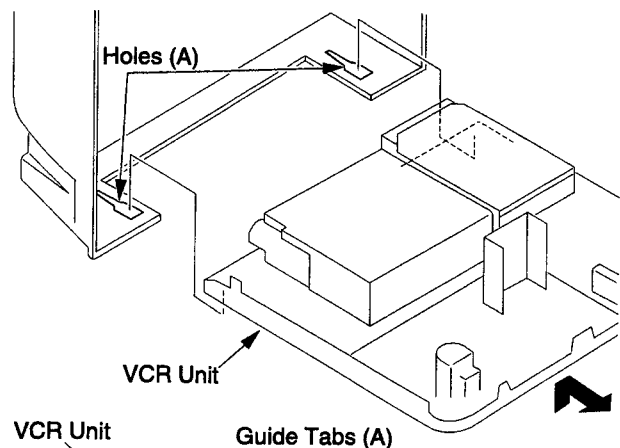


Fig. D3-2

Reassembly Notes

CAUTION:

Opener Lever may be damaged when VCR Unit is installed, with Cassette Door-Lid and Opener Lever of Cassette Up Ass'y set incorrectly.

1. Install the VCR Unit as follows:

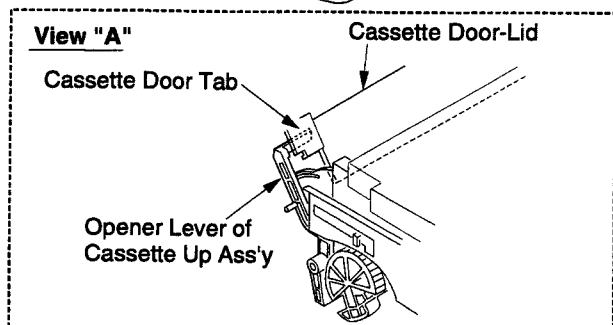
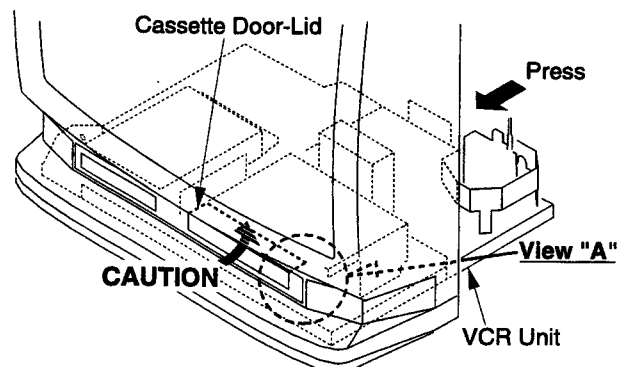


Fig. D3-3

2. Connection of the Connector P7002

Be sure to connect the Connector P7002 of FM Radio Antenna Code to DVD Sub C.B.A. correctly as shown in Fig. D3-1. If it is connected incorrectly, the radio output is not heard.

CRT Unit

Disassembly Procedure

1. Remove 4 Screws with Washers (A). Then, pull out the CRT Unit.

Note:

Place the Unit face down on a soft cloth before removing the CRT Unit.

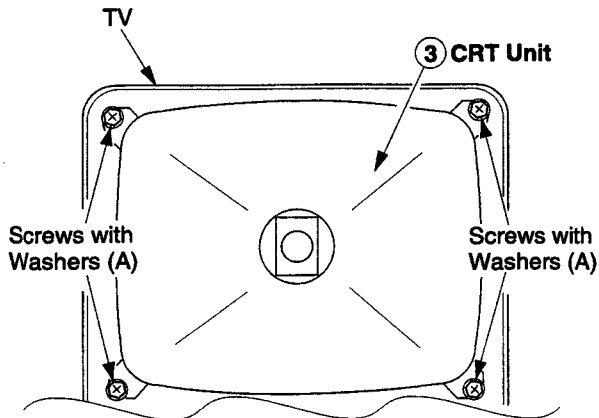


Fig. D4

DVD Top Shield Plate

Disassembly Procedure

Note:

If necessary, remove the some leads on the Top Shield Plate before removing the Top Shield Plate.

1. Remove 4 Screws (C), 4 Screws (D), and GND Wire. Then, remove the DVD Top Shield Plate.

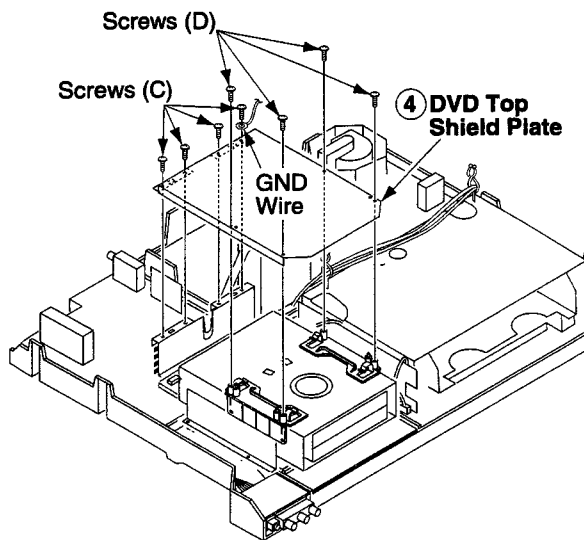


Fig. D5

DVD Ass'y, DVD Wire Clamper and Shield Plate Unit

Disassembly Procedure

1. Remove 4 Screws (E).
2. Disconnect 5 Connectors P8300, P8301, P8302, P8403 and P8404 to remove both the DVD Ass'y and DVD Wire Clamp from VCR Unit.

Note:

DO NOT allow disconnected Connectors to touch other parts.

3. Remove 4 Screws (F). Then, remove the 2 DVD Wire Clamps.

Note:

DO NOT lose removed parts other than the DVD Ass'y.

4. Remove 2 Screws (G). Then, remove the Shield Plate Unit.

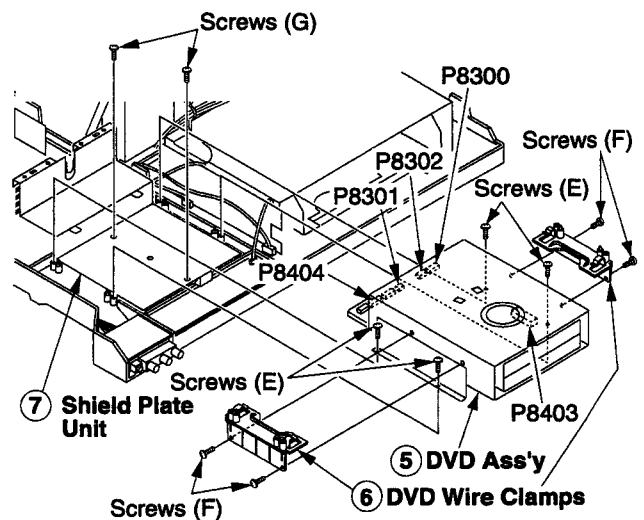


Fig. D6-1

5. Remove 2 Screws (G). Then, remove the Mount Plate L,R.

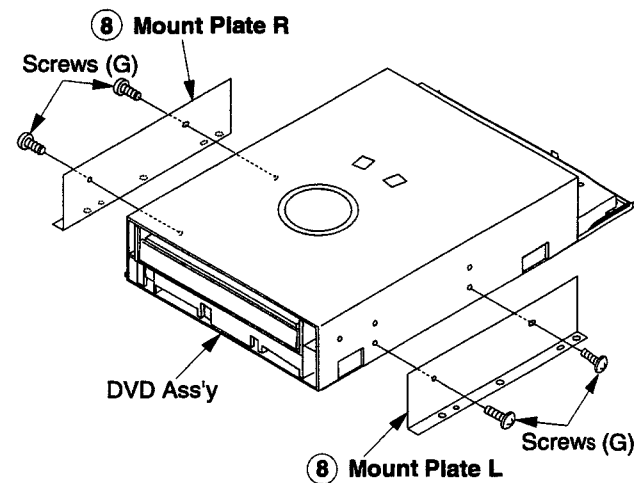


Fig. D6-2

Jack C.B.A. and Operation C.B.A.

Disassembly Procedure

1. Remove 3 Screws (H). Then, remove the Jack Video C.B.A.
2. Disconnect Connector P6392 on HiFi Audio C.B.A. Then, remove the Operation C.B.A.

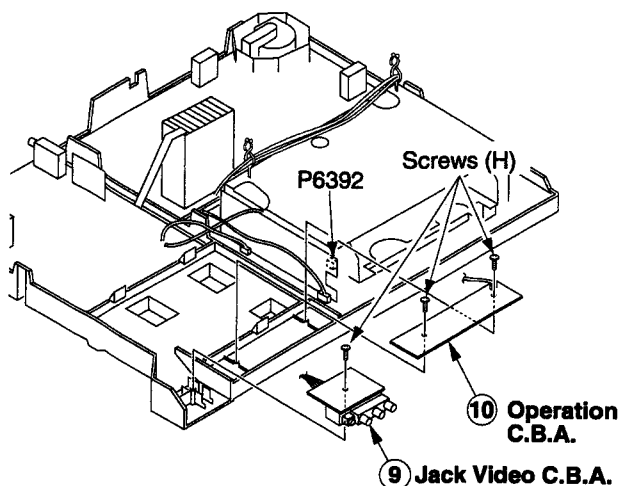


Fig. D7

Top Shield Plate Ass'y

Disassembly Procedure

1. Release 2 Clampers (B) on the Top Shield Plate Ass'y and remove the leads from the clampers.
2. Remove 4 Screws (I). Then, remove the Top Shield Plate Ass'y.

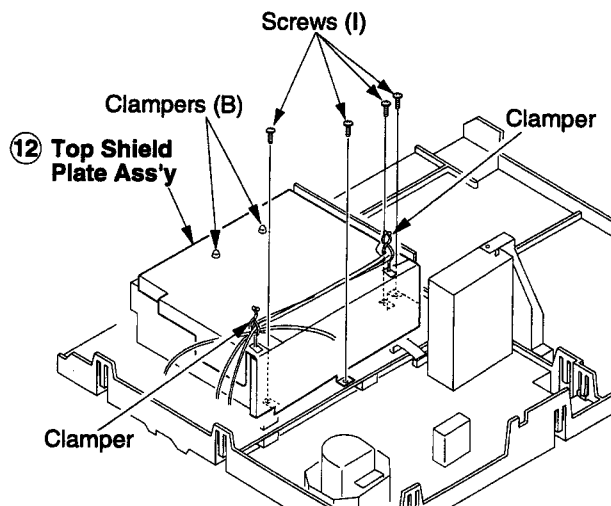


Fig. D9

DVD Sub C.B.A.

Disassembly Procedure

1. Disconnect 7 Connectors P1501, P1503, P1504, P1505, P1506, P4207, P6003, P6005, P7001 and P7007.
2. While releasing 3 Locking Tabs (B) and lift the DVD Sub C.B.A. out of the Frame.

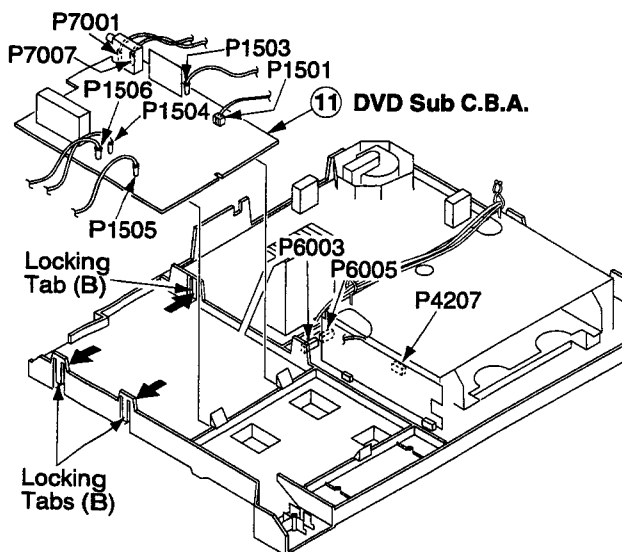


Fig. D8

TV Main C.B.A.

Disassembly Procedure

1. Disconnect Connectors P1 on the TV Main C.B.A.
Note :
When disconnecting or connecting Connectors P1, take extreme care not to break them.
2. Remove Screw (J) on the Heat Sink.
3. Remove the TV Main C.B.A. by releasing 3 Locking Tabs (C) and A/C Cord from the frame.

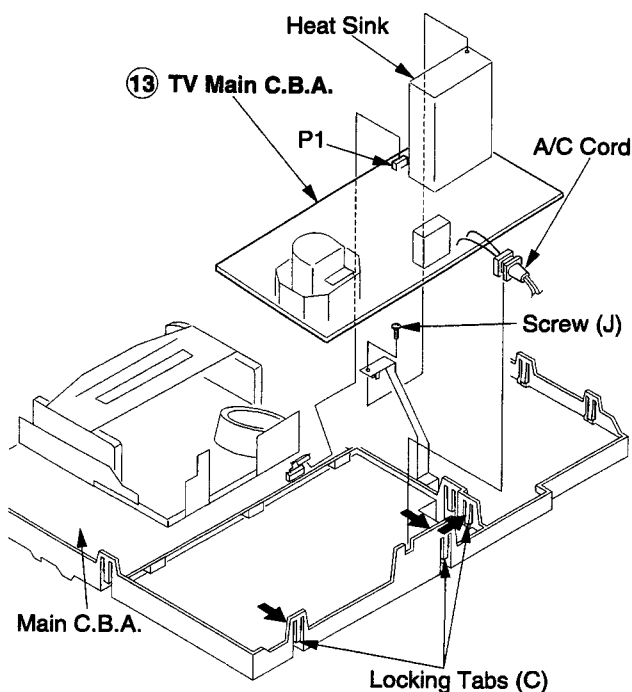


Fig. D10

VCR Chassis Unit

Disassembly Procedure

1. Slide the Holder Unit (refer to "Method for Loading/Unloading of Mechanism" in Service Notes) to gain access to 2 Screws (K) for removal.
2. Remove 3 Screws (L) and (M).
3. Push Locking Tab (D) outward while gently lifting the left side of the Cassette Up Ass'y (Portion "A").
4. While pushing 2 Locking Tabs (E) outward, lift the right side of the Cassette Up Ass'y (Portion "B") until even with Portion "A". Then, lift the VCR Chassis Unit out of the Frame.

Note:

Work carefully so as not to break Locking tabs.

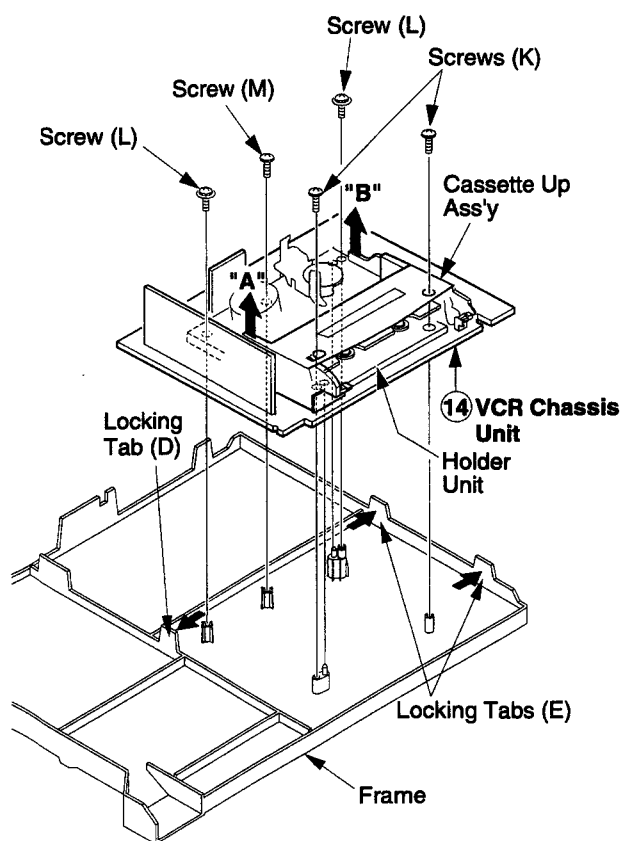


Fig. D11

Reassembly Notes

1. When installing 2 Screws (K), slide the Holder Unit (refer to "Method for Loading/Unloading of Mechanism" in Service Notes) to tighten screws. Then, slide it back to the **EJECT** Position. Make sure that Mechanism and Cassette Up Ass'y are in the **EJECT** Position. (Refer to "EJECT Position confirmation" in Disassembly/Assembly Procedures of Mechanism.)

Main C.B.A.

Disassembly Procedure

1. Disconnect 4 Connectors of P2531, P2552, P3501 and P4001.
2. Carefully lift the Mechanism Chassis and Cassette Up Ass'y straight out from the Main C.B.A.

Note:

Work carefully so as not to break Sensor LED when lifting the Mechanism Chassis and Cassette Up Ass'y.

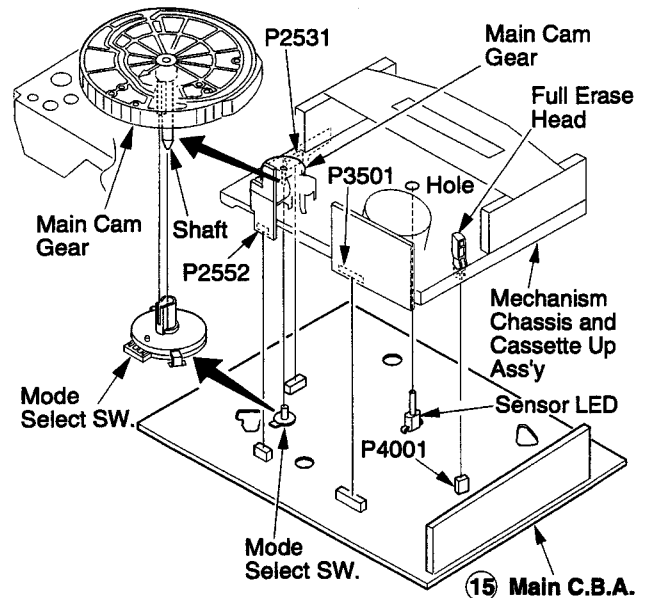


Fig. D12-1

Reassembly Notes

CAUTION

Installation of Mechanism Chassis and Cassette Up Ass'y onto Main C.B.A.

- 1) Make sure the Mode Select SW. on the Main C.B.A. is in **EJECT** position. If not, rotate the Mode Select SW. until the alignment projection is in the **EJECT** Position as shown below.

Make sure the Mechanism and Cassette Up Ass'y are in the **EJECT** Position. (Refer to "EJECT Position confirmation" in Disassembly/Assembly Procedures of Mechanism.)

Mode Select SW.

EJECT Position

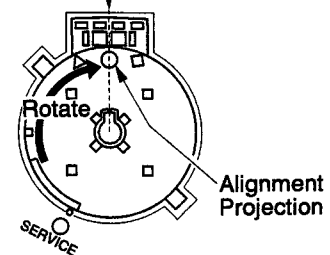


Fig. D12-2

- 2) Install the Mechanism Chassis and Cassette Up Ass'y straight onto the Main C.B.A. so that the Sensor LED clears the hole in the Mechanism Chassis and that 4 Connectors (P2531, P2552, P3501, and P4001) are aligned and seated securely.

Cassette Up Ass'y

Disassembly Procedure

1. Slide Holder Unit (refer to "Method for Loading/Unloading of Mechanism" in Service Notes) to gain access to 2 Screws (N) for removal.
2. Remove Screw (O).
3. Unhook Spring (A).
4. Slide the Cassette Up Ass'y towards the front to release Locking Tab (G). Then, lift it up and remove.

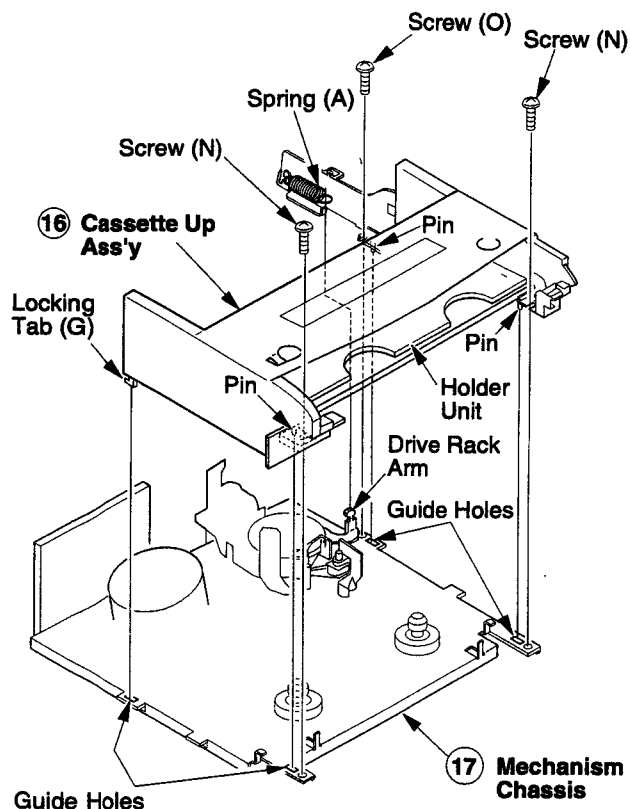


Fig. D13

Reassembly Notes

Installation of Cassette Up Ass'y

- 1) Confirm that the 3 pins and Locking Tab (G) under the Cassette Up Ass'y are in each of the 4 Guide Holes on the Mechanism Chassis when installing the Cassette Up Ass'y. Then, slide the Cassette Up Ass'y towards the back.
- 2) Slide Holder Unit (refer to "Method for Loading/Unloading of Mechanism" in Service Notes) to tighten 2 Screws (N) and Screw (O). Be careful not to tighten screws too much, or the Cassette Up Ass'y may be bent outward. Then, slide it back to the **EJECT** Position.
- 3) Hook Spring (A) to the Drive Rack Arm on the Mechanism Chassis.

DISASSEMBLY/ASSEMBLY PROCEDURES OF MECHANISM

Disassembly Method

This chart indicates Step/Location No. of Parts to be serviced and prior steps to gain access items to be serviced when disassembling. When reassembling, perform the step(s) in the reverse order.

Step/Loc. No.	Part	Prior Step(s)	Step/Loc. No.	Part	Prior Step(s)	Step/Loc. No.	Part	Prior Step(s)	Step/Loc. No.	Part	Prior Step(s)
①	Cylinder Unit	-----	⑪	Main Lever Drive Arm	3, 4, 5, 7, 8, 9	⑲	Loading Post Base-S Unit	16	⑳	S Loading Arm Unit	30
②	Upper Cylinder Unit	-----	⑫	T Brake Unit	9	㉑	Loading Post Base-T Unit	9, 20	㉒	Center Clutch Unit	-----
③	Opener Piece	-----	⑬	Changing Lever A	9	㉓	Capstan Rotor Unit	-----	㉔	Changing Gear Spring	32
④	Pinch Arm Unit	3	⑭	T Reel Table	9, 12, 13	㉕	Capstan Holder Unit	23	㉖	Changing Gear	32, 33
⑤	Motor Block Ass'y	-----	⑮	Full Erase Head	-----	㉗	SS Brake Arm Unit	-----	㉘	Changing Lever-B	32, 33, 34
⑥	Audio Control Head Unit	5	⑯	Tension Arm Unit	-----	㉙	Junction C.B.A.	-----	㉚	Idler Arm Unit	32, 33, 34
⑦	Main Cam Gear	3, 4, 5	⑰	S Spring Arm	-----	㉛	Capstan Stator Unit	23, 25, 26	㉜	Loading Rack Unit	9, 30
⑧	Drive Rack Arm	3, 4, 5, 7	⑱	S Reel Table	16, 17	㉝	Sub Rotor	23, 25, 26, 27	㉞	Grounding Plate Unit	-----
⑨	Main Lever	-----	㉑	S Brake Arm Unit	9, 16, 17, 18	㉟	PCB Holder	23, 25, 26, 27	㊱	FG Head	-----
⑩	P5 Arm Unit	9	㉒	Main Lever Guide	9	㊲	T Loading Arm Unit	-----			

Step/Loc. No.: Order of steps in procedure.

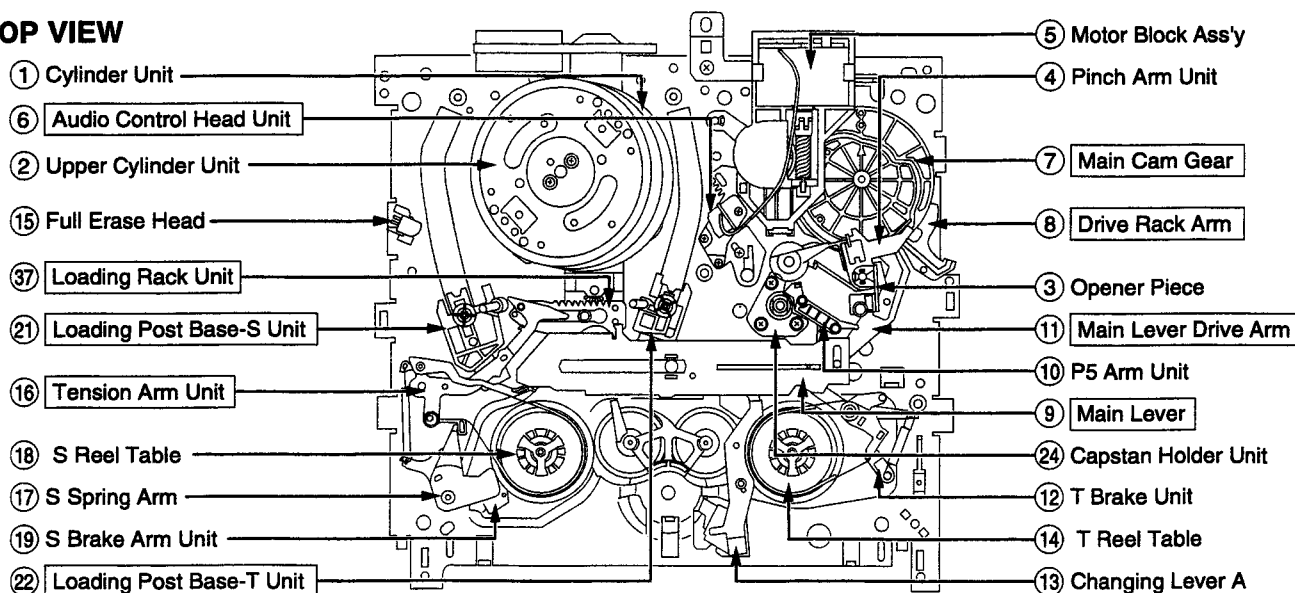
Part : Part to be removed or installed.

Prior Step(s) : Steps to be completed prior to the current step.

Note: When the mechanical parts surrounded by rectangle are removed or replaced, be sure to perform necessary adjustment or alignment procedures according to the mechanical adjustment procedures section and disassembly/assembly procedures of mechanism section.

Perform all disassembly and alignments procedures in EJECT Position.

TOP VIEW



BOTTOM VIEW

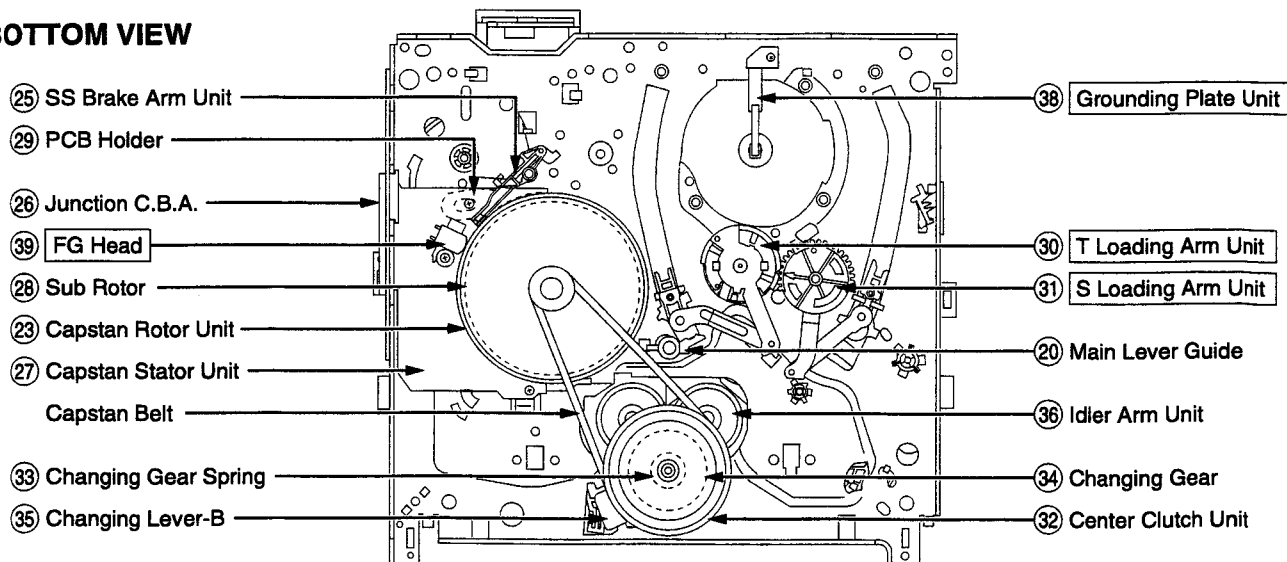


Fig. J1-1

EJECT Position Confirmation

Check the following alignment points to confirm that the Mechanism and Cassette Up Ass'y are in the **EJECT** Position from the top side.

(By using alignment points ❖1 & ❖2, it is possible to roughly confirm the S & T Loading Arm Units from the top side, even though they are located on the bottom side of the mechanism chassis.)

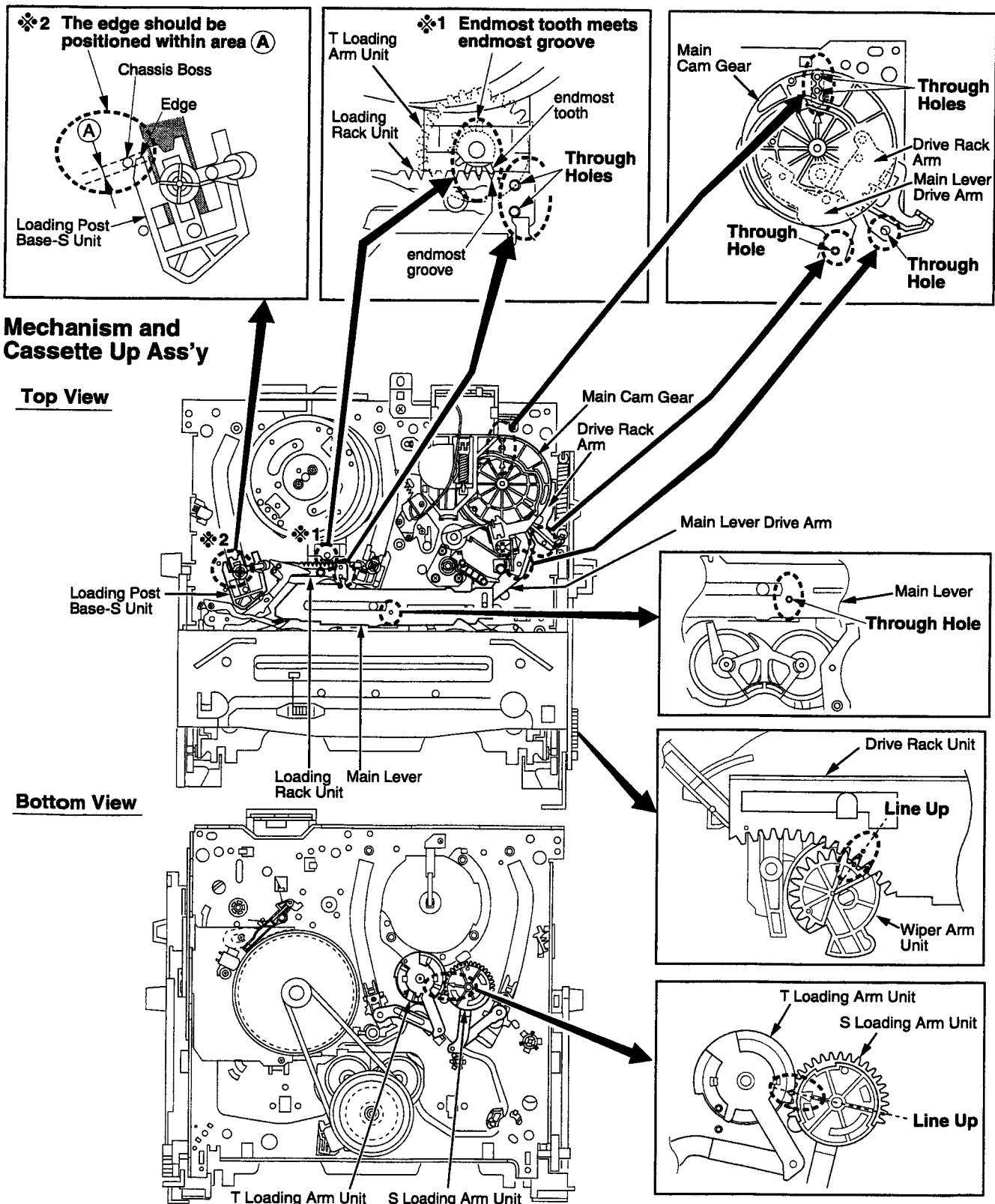


Fig. J1-2

Cylinder Unit

Disassembly Procedure

1. Remove 3 Screws (A) and 2 Screws with Washers (A). Then, lift the Cylinder Unit and the Head Amp C.B.A. out from the mechanism.
2. Unsolder P3502 and P3503. Then, remove the Head Amp C.B.A.

Note:

Use extreme care when removing or replacing the Cylinder Unit. Do not touch the Video Heads during servicing.

CAUTION:

When removing the Cylinder Unit, avoid touching IC2601 on the Head Amp C.B.A. because it is **HOT** during operation.

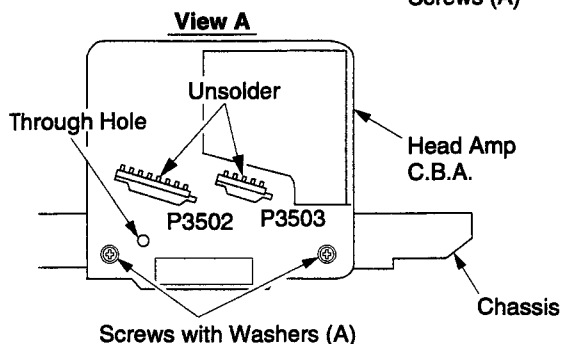
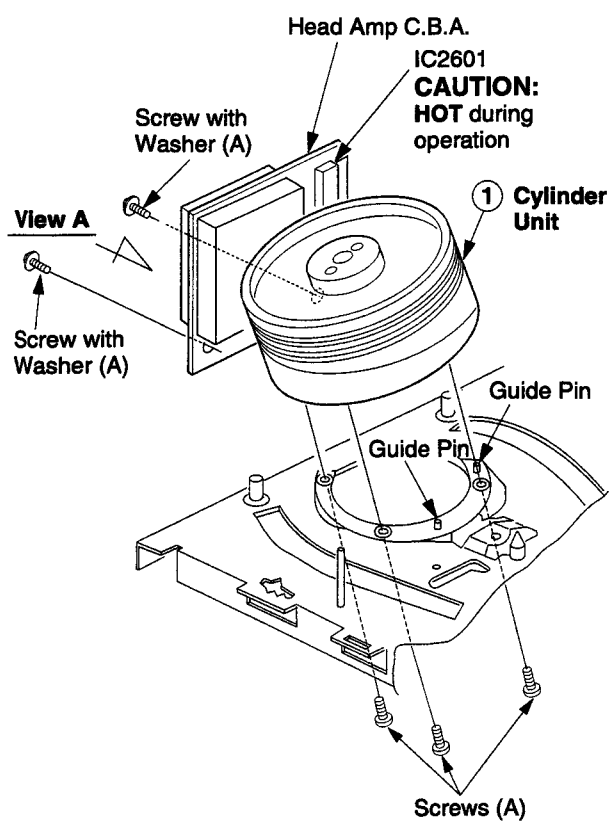


Fig. J2-1

Reassembly Notes

1. Use extreme care when removing or replacing the Cylinder Unit. Do not touch the Video Heads during servicing.
2. **Installation of Cylinder Unit**
 - 1) Install the Cylinder Unit so that the 2 holes on the lower surface of the Cylinder Unit fit over the 2 Guide Pins on the Cylinder Base and loosely secure it with 3 Screws (A).
 - 2) Install the Head Amp C.B.A. so that the hole on the Head Amp C.B.A. lines up with the hole on the chassis and secure it with 2 Screws with Washers (A).
 - 3) Position the Cylinder Unit so that foil patterns of connectors (P3502 and P3503) and Head Amp C.B.A. are aligned, and tighten 3 Screws (A).
 - 4) Solder connectors (P3502 and P3503).
3. **Adjustment of Grounding Plate Unit**
 - 1) After installing, make sure that the Grounding Plate Unit, on the bottom side of mechanism chassis, is positioned on the right side of the Cylinder shaft so that the center line of the plate is just less than 1.0 mm measured from the center of the Cylinder shaft. If required, adjust the plate position by loosening Black Screw (A).
Never install the Grounding Plate Unit on the left side of the Cylinder shaft.
Incorrect positioning will cause cylinder buzz.

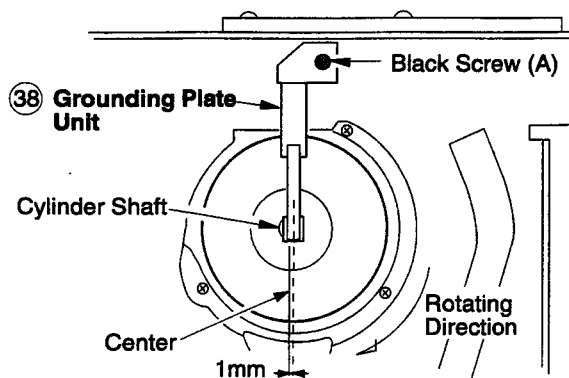


Fig. J2-2

- 2) After installing, perform the "Tape Interchangeability Adjustment" procedures.

Upper Cylinder Unit

Disassembly Procedure

1. Remove 2 Screws with Washers (B).
2. Carefully lift the Upper Cylinder Unit from the shaft.

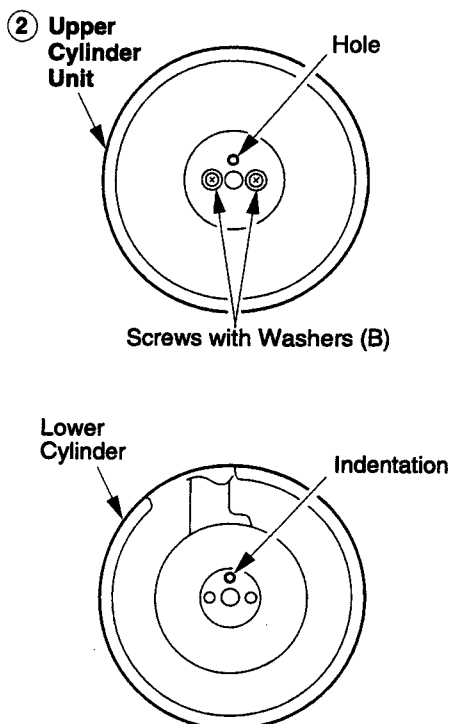


Fig. J3

Note:

Use extreme care when removing or replacing the Upper Cylinder Unit. Do not touch the Video Heads during servicing.

Reassembly Notes

1. Use extreme care when removing or replacing the Cylinder Unit. Do not touch the Video Heads during servicing.
2. **Alignment of Upper Cylinder Unit**
 - 1) When installing, make sure that the hole on the Upper Cylinder is aligned with the indentation on the Lower Cylinder.
 - 2) After installing, perform the "Tape Interchangeability Adjustment" procedures.

Opener Piece, Pinch Arm Unit, Motor Block Ass'y, and Audio Control Head Unit

Disassembly Procedure

1. Remove the Opener Piece by pulling it upward while releasing 2 Locking Tabs (A).
2. Pull up on the Pinch Arm Unit.
3. Release 3 Locking Tabs (B) and remove Screw with Washer (C). Then, remove the Motor Block Ass'y and Audio Control Head Unit.

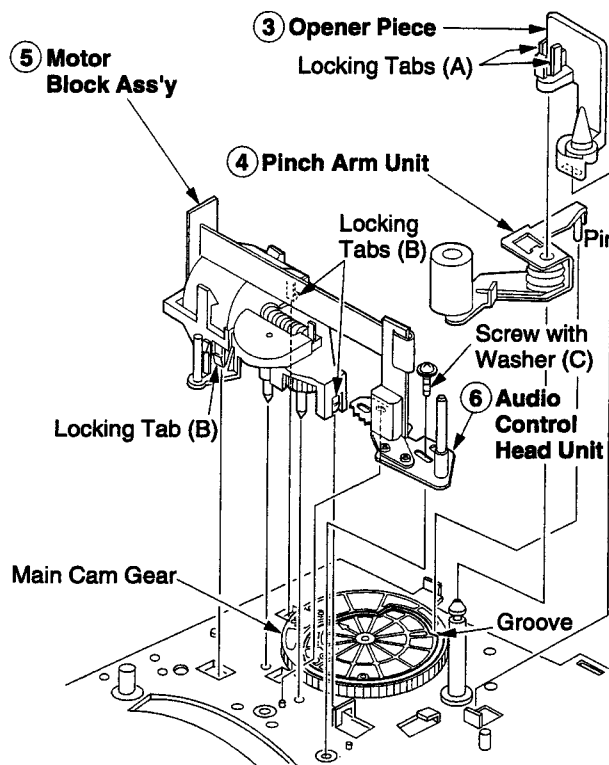


Fig. J4

Reassembly Notes

1. **Installation of Audio Control Head Unit**
 - 1) Install the Audio Control Head Unit before Motor Block Ass'y.
 - 2) After installing, perform the "Tape Interchangeability Adjustment" procedures.
2. **Installation of Pinch Arm Unit**
 - 1) Install the Pinch Arm Unit so that the Pin of Pinch Arm Unit fits in the groove of Main Cam Gear.

Main Cam Gear and Drive Rack Arm

Disassembly Procedure

1. Remove the Main Cam Push Nut. (Refer to Note.)
2. Pull up on the Main Cam Gear.
3. Turn the Drive Rack Arm fully counterclockwise as shown.
4. Pull up on the Drive Rack Arm.

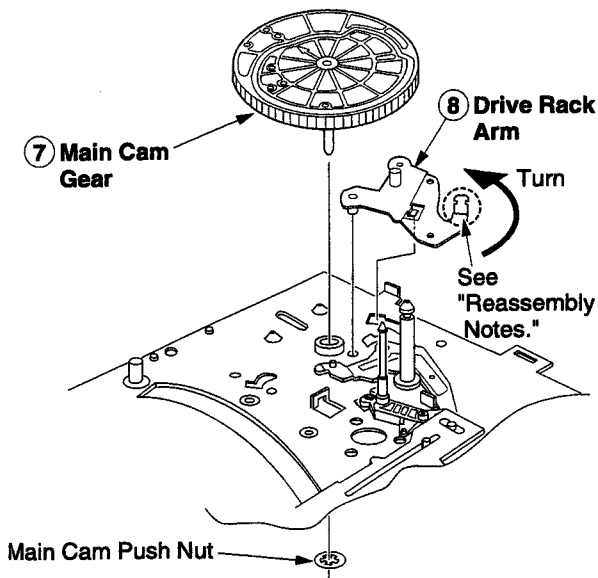


Fig. J5-1

Note:

When removing the Main Cam Push Nut, press the Main Cam Gear to make space between the Main Cam Push Nut and Bottom of Chassis. Then, remove the Main Cam Push Nut using a screwdriver etc.

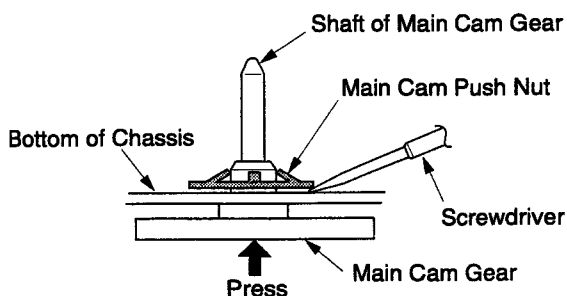


Fig. J5-2

Reassembly Notes

1. Alignment of Main Cam Gear, Drive Rack Arm, and Main Lever Drive Arm

- 1) Confirm that the hole (C) on the Main Lever Drive Arm is aligned with the hole on chassis (Through hole (C)) as shown.
- 2) Install the Drive Rack Arm so that the hole (A) is aligned with the hole on chassis (Through hole (A)) as shown.
- 3) Install the Main Cam Gear so that the 2 holes (B) marked "E" are aligned with the hole on chassis (Through hole (B)) as shown. ("E" indicates the EJECT position.)

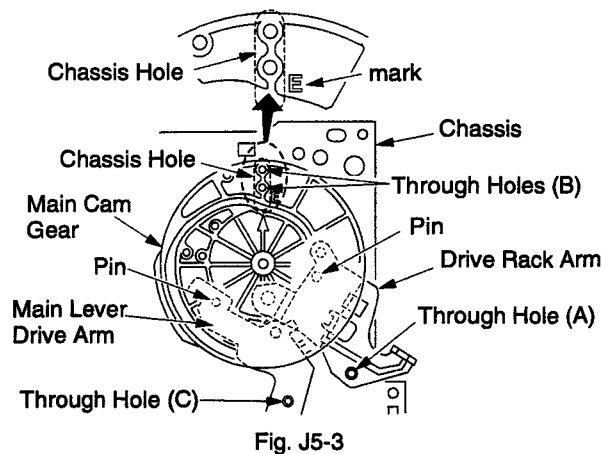


Fig. J5-3

2. Holes on Main Cam Gear

- 1) The holes on Main Cam Gear should be aligned with the hole on chassis in each mode (Through hole) as shown.

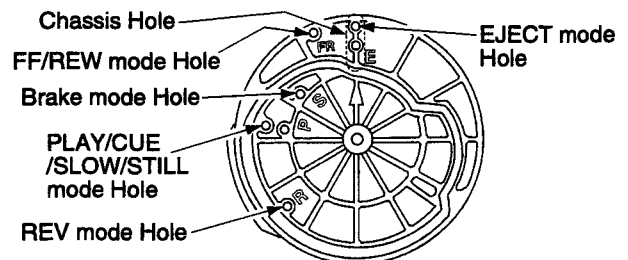


Fig. J5-4

3. Main Cam Gear Kit

- 1) Main Cam Gear is supplied as a Main Cam Gear Kit only (Kit No. VVGS0008). Main Cam Gear Kit consists of a Main Cam Gear and a Main Cam Push Nut. However, Main Cam Push Nut is available separately as a replacement part.

4. Installation of Main Cam Gear and Main Cam Push Nut

- 1) Position the chassis upside down and place a Support under the Main Cam Gear. Install the Main Cam Push Nut with Needlenose Pliers etc. so that it is flush with the chassis.

There may be some slight scratches on the Shaft of Main Cam Gear, when removing the Main Cam Gear. In case that the Main Cam Gear can be installed securely without tottering, it is fine to use the one. If any tottering, replace a new one.

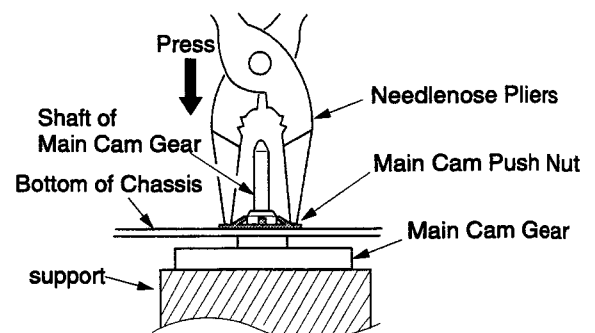


Fig. J5-5

5. The Main Cam Push Nut is not reusable. Install a new one.
6. Make sure to hook Spring (A) of the Cassette Up Ass'y to the Drive Rack Arm. Refer to "Cassette Up Ass'y" in "Disassembly/Assembly Procedures of Cabinet."

Main Lever

Disassembly Procedure

1. Release 2 Locking Tabs (C) and Locking Tab (D). Then, remove the Main Lever.

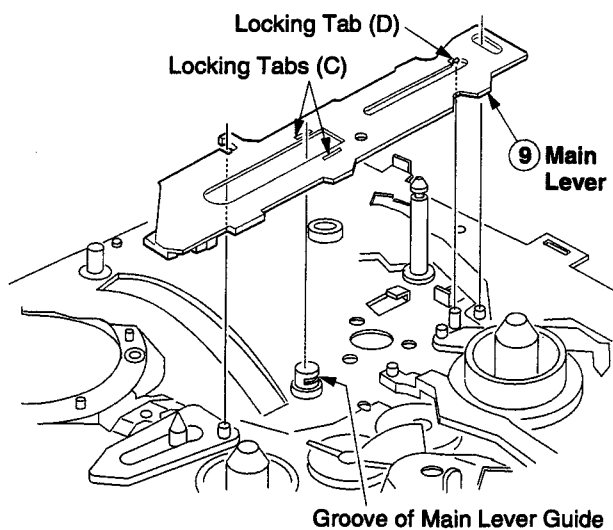


Fig. J6-1

P5 Arm Unit and Main Lever Drive Arm

Disassembly Procedure

1. Pull up on the P5 Arm Unit.
2. Turn the Main Lever Drive Arm fully counterclockwise as shown.
3. Pull up on the Main Lever Drive Arm.

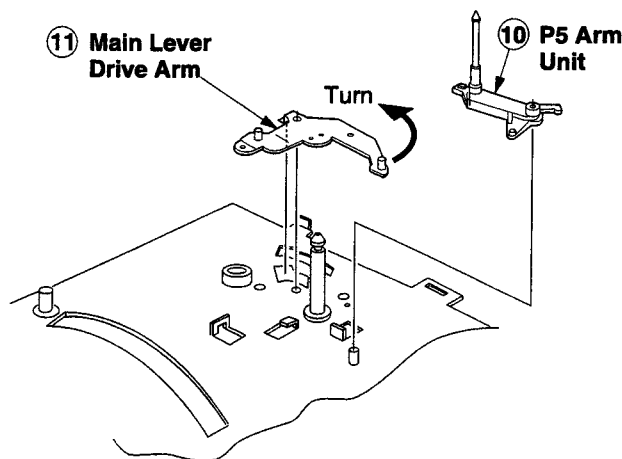


Fig. J7-1

Reassembly Notes

1. **Installation/Alignment of Main Lever**
 - 1) Make sure that the 2 holes of Loading Rack Unit are aligned with the holes on chassis (Through holes).
 - 2) Turn the P5 Arm Unit to the Capstan Rotor Unit Shaft side.
 - 3) Turn the T Brake Unit to the T Reel Table side.
 - 4) Position the Main Lever so that the Loading Rack Unit Pin fits in the niche of Main Lever. Confirm that pins and bosses are in the position and that the hole of Main Lever is aligned with the hole on chassis (Through hole) as shown. Then, install the Main Lever.
 - 5) Push down the Locking Tabs (C) to set in the groove of Main Lever Guide.

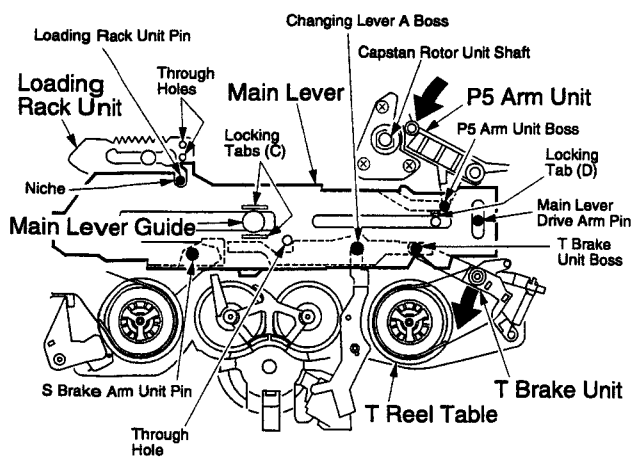


Fig. J6-2

Reassembly Notes

1. **Alignment of Main Lever Drive Arm**
 - 1) Install the Main Lever Drive Arm so that the hole (C) is aligned with the hole on the chassis Through hole (C) as shown.

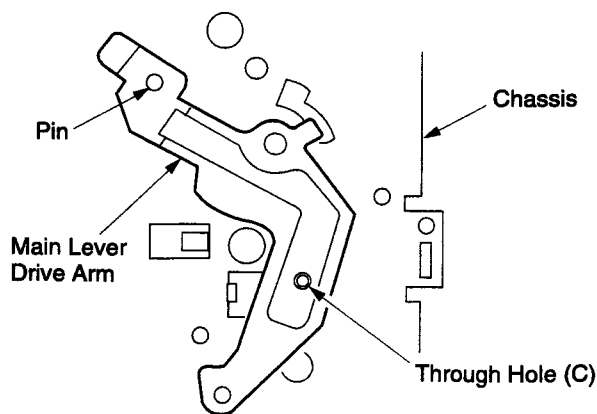


Fig. J7-2

T Brake Unit, Changing Lever A, and T Reel Table

Disassembly Procedure

1. Remove the T Brake Unit while releasing Locking Tab (E) located under the chassis.
2. Remove Cut Washer (A). Then, pull up on the Changing Lever A and remove.
3. Pull up on the T Reel Table.

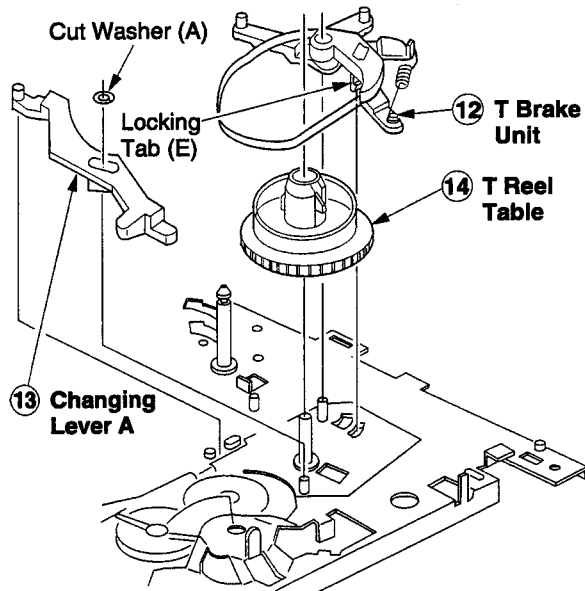


Fig. J8-1

Reassembly Notes

1. How to distinguish between S Reel Table and T Reel Table

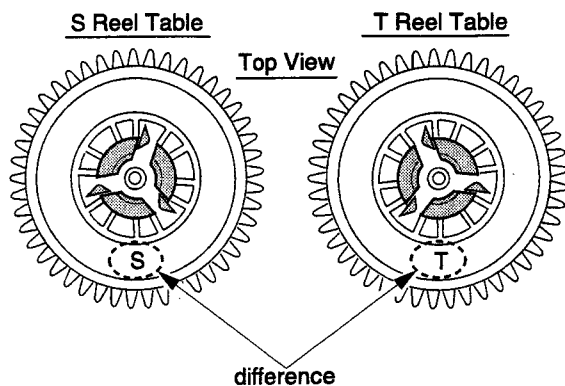


Fig. J8-2

2. Cut Washer (A) is not reusable. Install a new one.

Full Erase Head, Tension Arm Unit, S Spring Arm, and S Reel Table

Disassembly Procedure

1. Turn the Full Erase Head fully counterclockwise while releasing Locking Tab (F) as shown. Then remove it.
2. Unhook Spring (A).
3. Remove the Tension Arm Unit by pulling it up while releasing 2 Locking Tabs (G).
4. Remove the S Spring Arm while releasing Locking Tab (H).
5. Pull up on the S Reel Table.

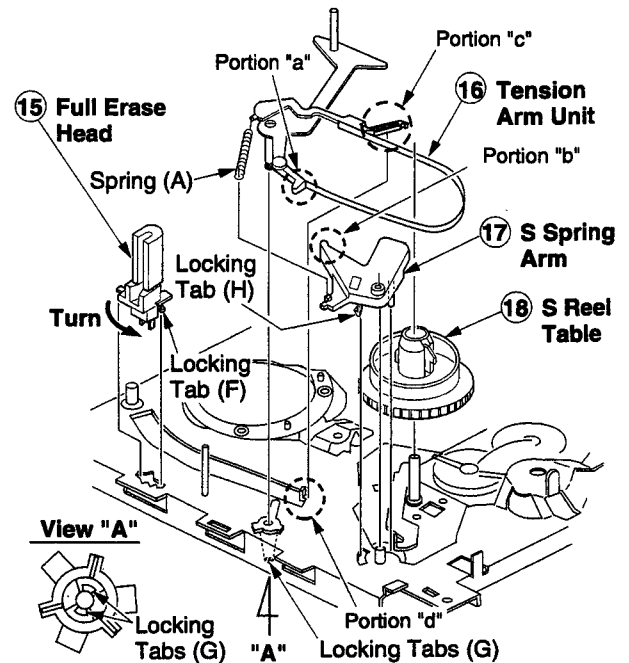


Fig. J9-1

Reassembly Notes

1. Confirmation/Adjustment of Tension Arm Unit
 - 1) When installing Tension Arm Unit and S Spring Arm, confirm "a," "b," "c," and "d" portion are in the proper position as shown.

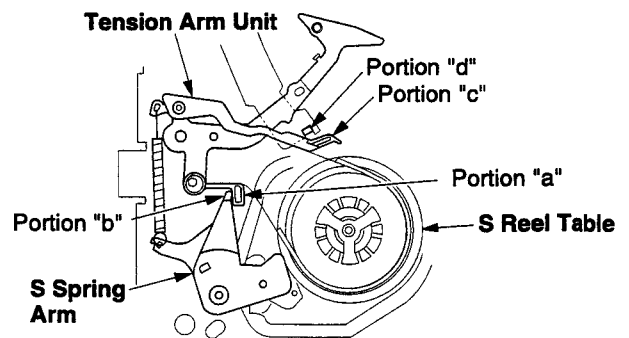


Fig. J9-2

- 2) After installing, perform the "Tension Post Adjustment" procedures.

S Brake Arm Unit, Main Lever Guide, Loading Post Base -S, and Loading Post Base -T Unit

Disassembly Procedure

1. Remove the S Brake Arm Unit while releasing 2 Locking Tabs (I).
2. Remove the Main Lever Guide while releasing Locking Tab (J).
3. Slide the Loading Post Base -S and T Units to the end of the guide slots to remove.

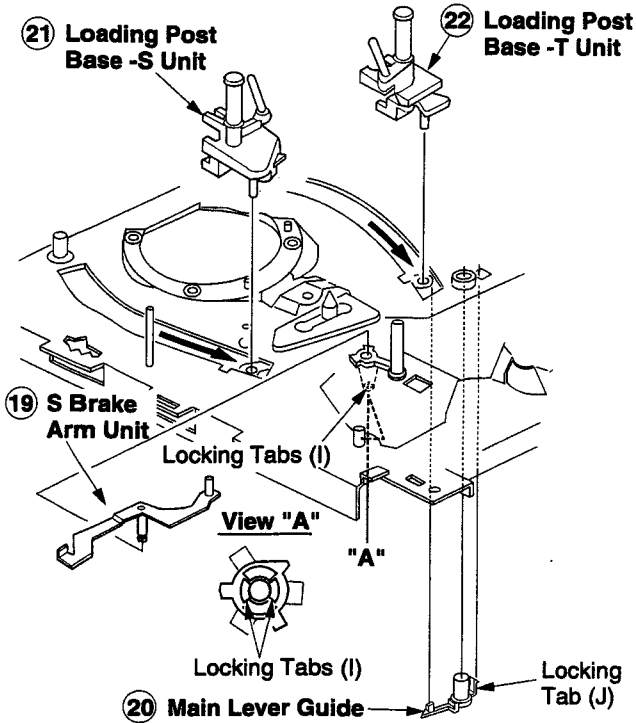


Fig. J10

Reassembly Notes

1. **Adjustment of Loading Post Base -S Unit and Loading Post Base -T Unit**
 - 1) After installing, perform the "P2 and P3 Post Height Adjustment" procedures and "Tape Interchangeability Adjustment" procedures.

Capstan Rotor Unit, Capstan Holder Unit, and SS Brake Arm Unit

Disassembly Procedure

1. Remove the Capstan Belt.
2. Cut the Stopper with a cutter to remove.
3. Pull up on the Capstan Rotor Unit.
4. Remove 3 Screws (B). Then remove the Capstan Holder Unit.
5. Unhook Spring (B).
6. Turn the SS Brake Arm Unit so that the Tab (A) lines up with the niche. Then, remove the SS Brake Arm Unit.

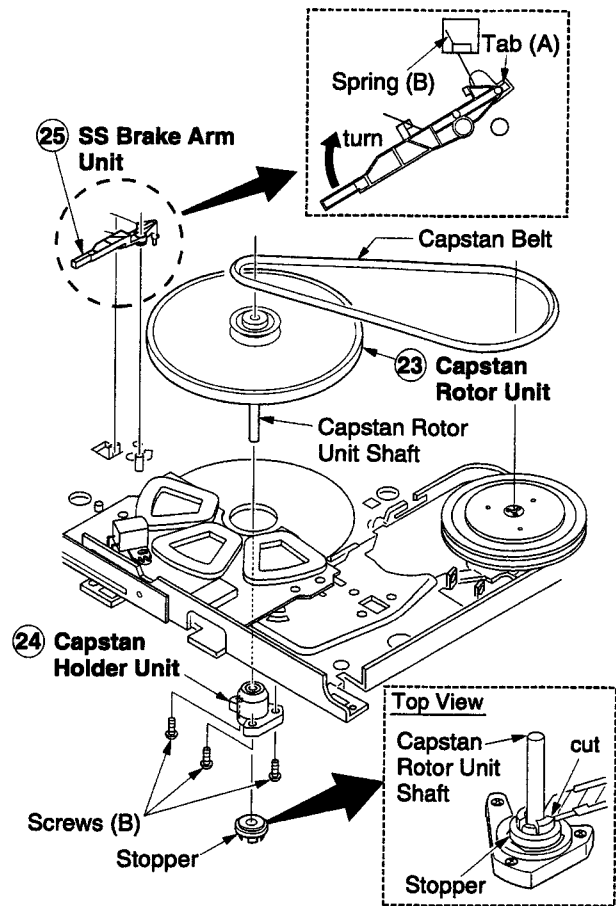


Fig. J11-1

Reassembly Notes

1. **Installation of Capstan Rotor Unit**
 - 1) Insert the Capstan Rotor Unit Shaft into the hole of the Capstan Holder Unit.
 - 2) Place a support under the Capstan Rotor Unit shaft. Install the Stopper. Be careful not to scratch the shaft or Capstan Holder Unit.
 - 3) Remove the support. Press the top end of the shaft down so that the Stopper is properly positioned. You should be able to move the shaft up and down slightly when properly positioned.

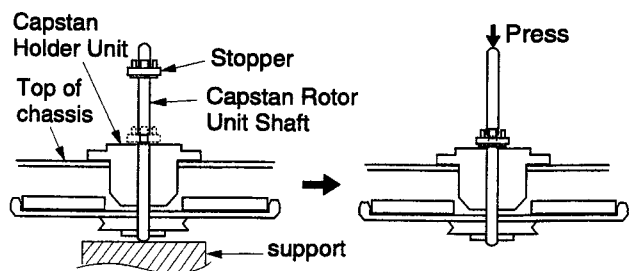


Fig. J11-2

2. Capstan Rotor Kit

Capstan Rotor Unit, Capstan Holder Unit, and Stopper are supplied as a Capstan Rotor Kit only. (Kit No. VXPS0382K2) They are not reusable. Install all new parts. Because even invisible scratches on the Capstan Rotor Unit shaft and the Capstan Holder Unit, made when cutting the Stopper, could cause tape path instability.

Junction C.B.A., Capstan Stator Unit, Sub Rotor, and PCB Holder

Disassembly Procedure

1. Remove 2 Screws (C).
2. Unsolder P2532 on the Junction C.B.A. Then, remove the Junction C.B.A.
3. Remove Screw (D) and 2 Screws with Washers (D), (E). Then, remove Capstan Stator Unit, Sub Rotor, and PCB Holder.

CAUTION:

When removing Capstan Stator Unit, avoid touching IC2501 on the Capstan Stator Unit because it is **HOT** during operation.

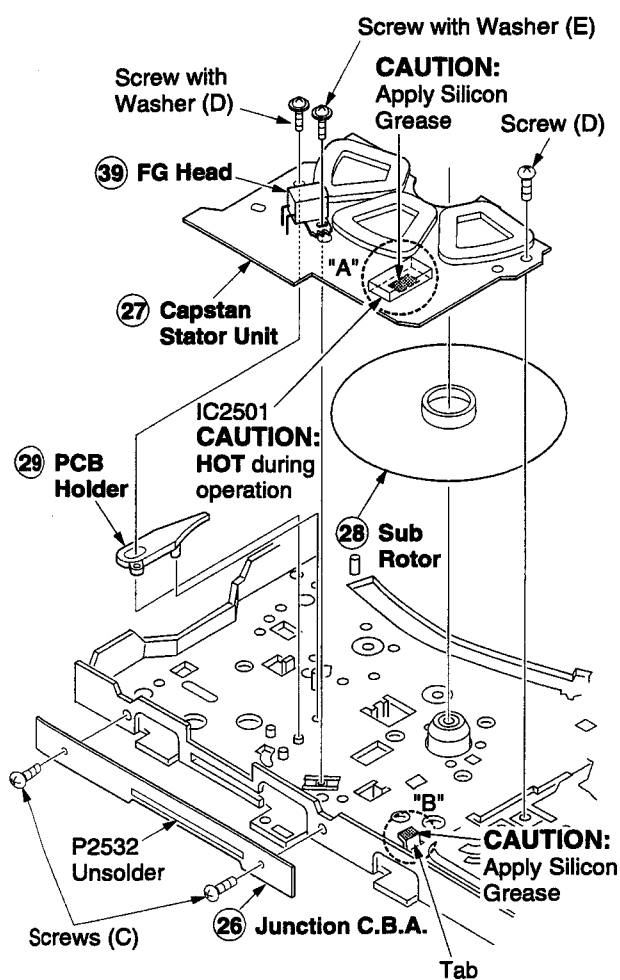


Fig. J12-1

Reassembly Notes

1. Application of Silicon Grease

CAUTION

When installing the IC2501 or Capstan Stator Unit, be sure to apply Silicon Grease (VFK1301) as shown. Be careful not to touch other parts with greased portion to prevent grease depletion.

Silicon Grease Application

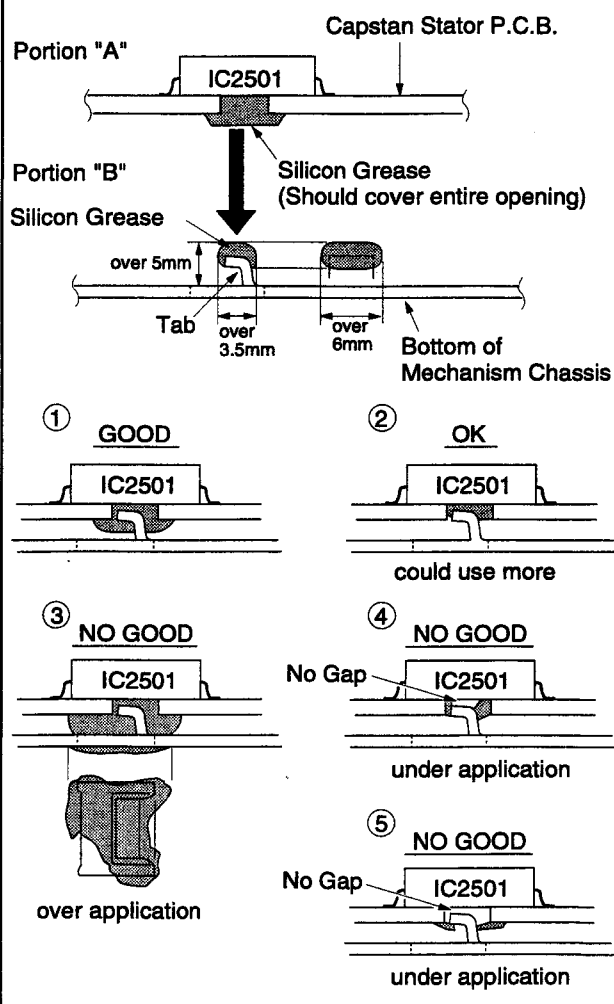


Fig. J12-2

2. Capstan Stator Kit

- 1) Capstan Stator Unit, Capstan Rotor Unit, Capstan Holder Unit, and Stopper are supplied as a Capstan Stator Kit only (Kit No. VEMS0316K2). However, IC2501 (AN3845SC) is available separately as a replacement part. Capstan Rotor Unit, Capstan Holder Unit, and Stopper are not reusable. Install all new parts. Because even invisible scratches on the Capstan Rotor Unit shaft and the Capstan Holder Unit, made when cutting the Stopper, could cause tape path instability.

3. Adjustment of FG Head

- 1) After installing, perform the "FG Head gap Adjustment" procedures.

T Loading Arm Unit and S Loading Arm Unit Disassembly Procedure

1. Remove the T Loading Arm Unit by pulling it up while releasing Locking Tab (K).
2. Pull up on the S Loading Arm Unit.

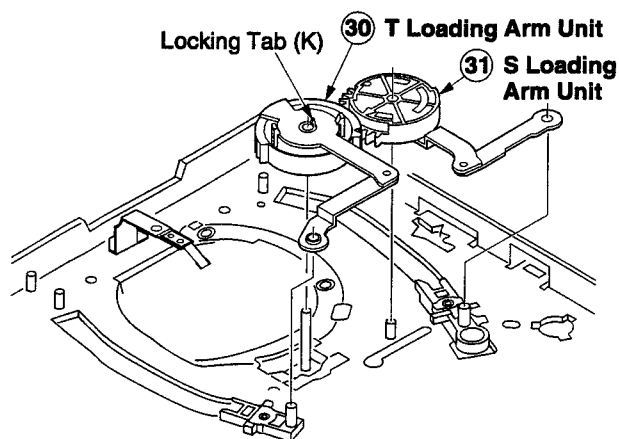


Fig. J13-1

Reassembly Notes

1. Alignment of Loading Rack Unit, T Loading Arm Unit, and S Loading Arm Unit

- 1) Slide the Loading Rack Unit so that the holes on it and the holes on the chassis line up properly.
- 2) Install the S Loading Arm Unit onto the Chassis.
- 3) Install the T Loading Arm Unit so that the triangle-shaped indent is aligned with the arrow on the S Loading Arm Unit as shown. Confirm that each hole on the T Loading Arm Unit, Chassis, and Loading Rack Unit are through holes.

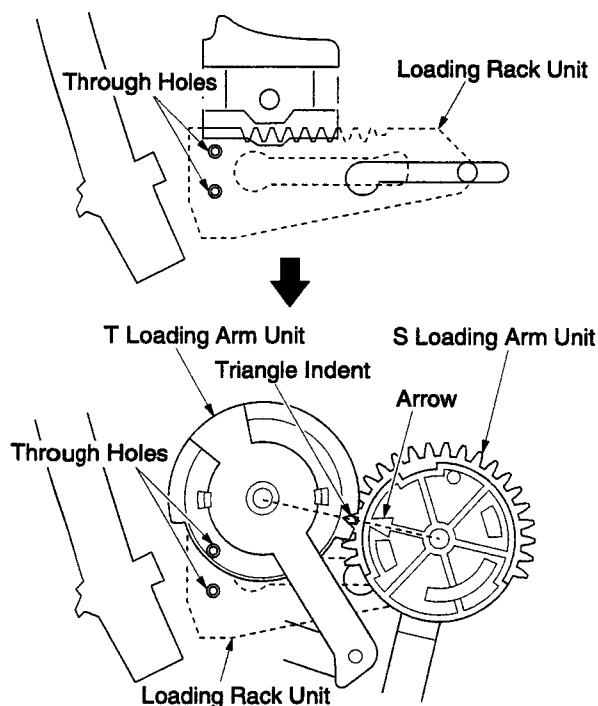


Fig. J13-2

Center Clutch Unit, Changing Gear Spring, Changing Gear, Changing Lever-B, and Idler Arm Unit

Disassembly Procedure

1. Remove Cut Washer (B). Then remove the Center Clutch Unit, Changing Gear Spring, and Changing Gear.
2. Remove Changing Lever -B so that the 2 Mounting Holes clear Mounting Pins.
3. Pull up on the Idler Arm Unit.

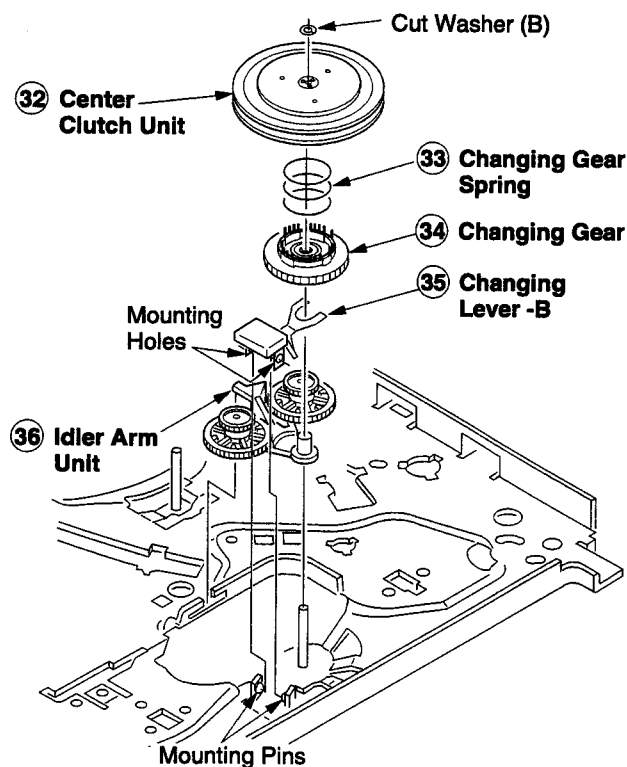


Fig. J14-1

Reassembly Notes

1. Installation of Center Clutch Unit

- 1) Fit the Center Clutch Unit into the Changing Gear as shown.

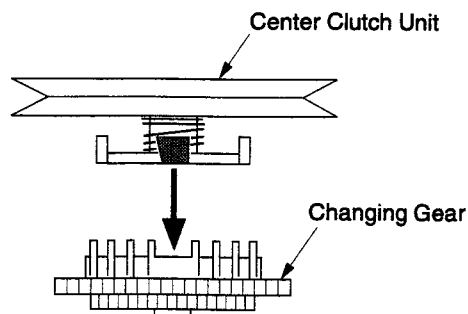


Fig. J14-2

2. Cut Washer (B) is not reusable. Install a new one.

Loading Rack Unit

Disassembly Procedure

1. Slide the Loading Rack Unit as indicated by the arrow. Then, pull up on the Loading Rack Unit.

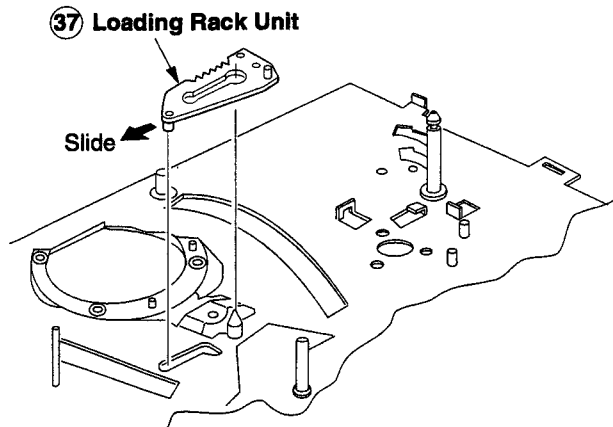


Fig. J15

Reassembly Notes

1. **Alignment of Loading Rack Unit**
 - 1) When installing Loading Rack Unit, refer to Reassembly Notes of "T Loading Arm Unit and S Loading Arm Unit."

DISASSEMBLY/ASSEMBLY PROCEDURES OF CASSETTE UP ASS'Y

Top Plate, Wiper Arm Unit, and Holder Unit

Disassembly Procedure

1. Remove Top Plate by releasing 2 Locking Tabs (A) on the left side and 2 Locking Tabs (B) on the right side of the Top Plate.
2. Remove Wiper Arm Unit by releasing 2 Locking Tabs (C). Then, remove the Holder Unit.

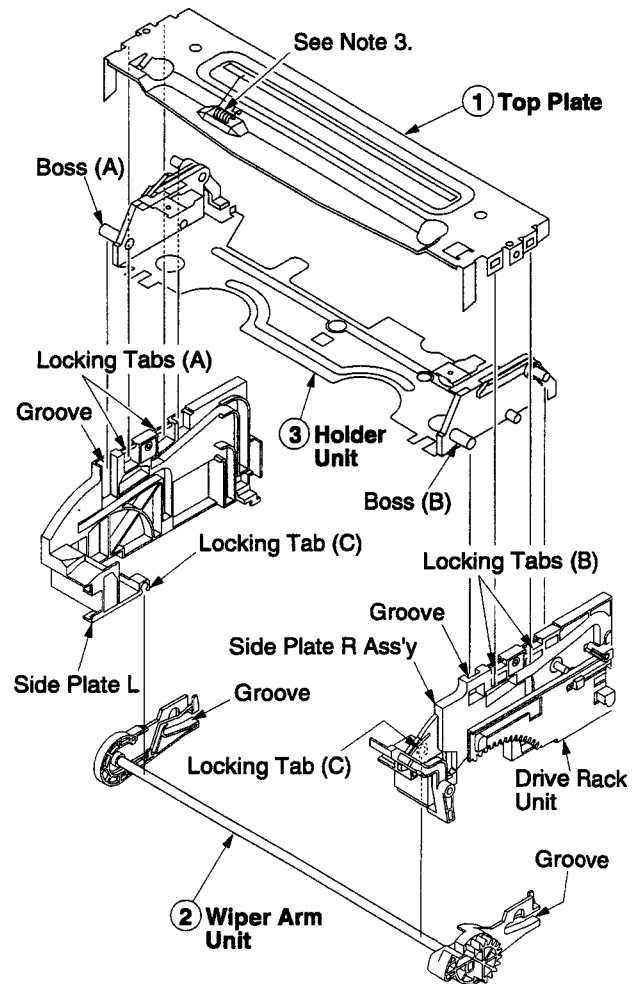


Fig. K1-1

Reassembly Notes

1. Alignment of Wiper Arm Unit and Drive Rack Unit

- 1) Slide the Drive Rack Unit to the far right as indicated by the arrow.
- 2) Install the Wiper Arm Unit so that the hole on the Wiper Arm Unit is aligned with the hole on the Drive Rack Unit.

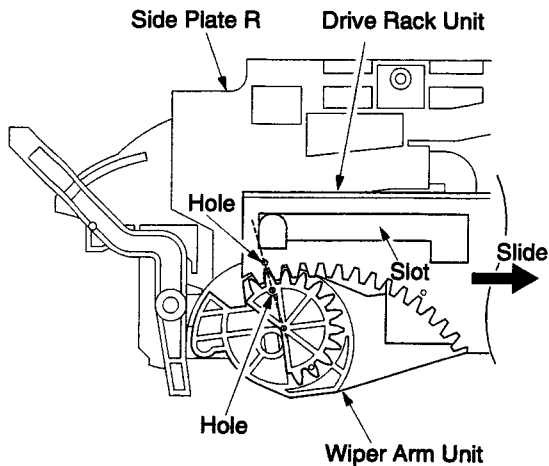


Fig. K1-2

2. Installation of Holder Unit

- 1) Turn the Wiper Arm Unit so that the grooves on each end are aligned with the each groove on Side Plate L and R.
- 2) Insert Holder Unit boss (A) and (B) into the grooves (See Fig. K1-1 on previous page).
- 3) Finally, in the EJECT Position, confirm that the protrudence on the Wiper Arm Unit is aligned with the indentation on the Drive Rack Unit.

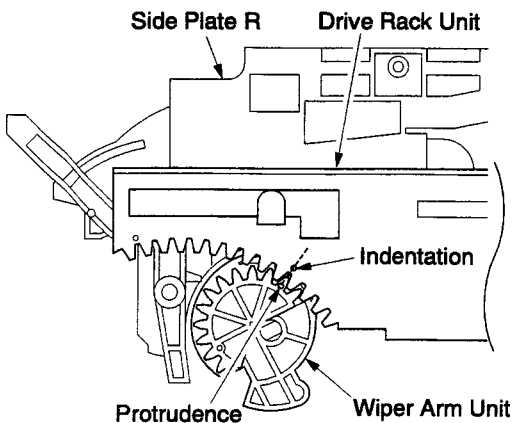


Fig. K1-3

Sensor Cover, Opener Lever, and Drive Rack Unit

Disassembly Procedure

1. Remove the Sensor Cover by releasing Locking Tab (D).
2. Remove the Opener Lever by releasing 2 Locking Tabs (E). Then remove the Drive Rack Unit.

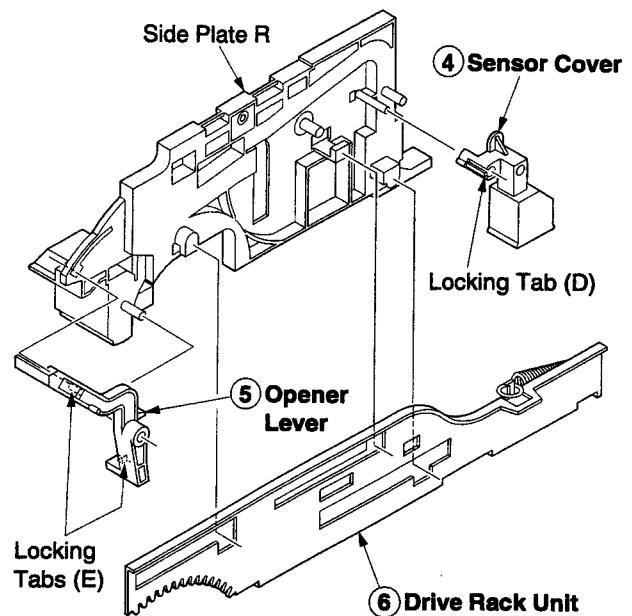
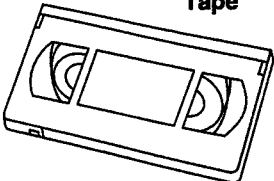
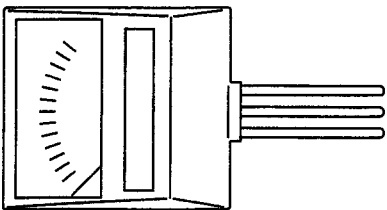
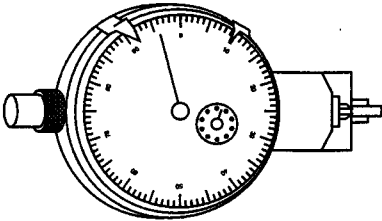
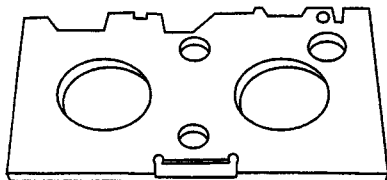

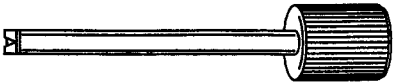
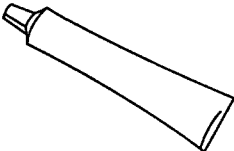
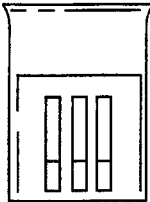
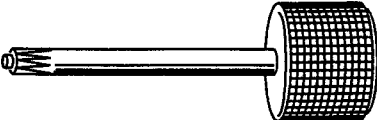
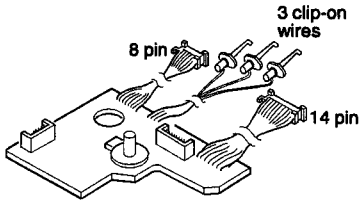
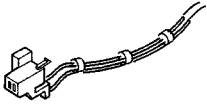
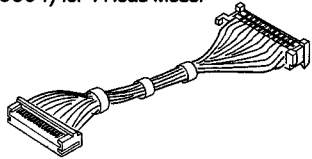
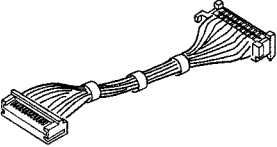
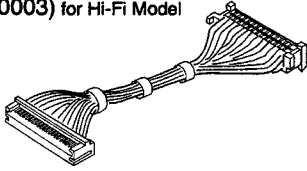


Fig. K2

3. As an ESD countermeasure, make sure the spring is in contact with Top Cover.

ADJUSTMENT PROCEDURES

SERVICE FIXTURES AND TOOLS

VFMS0003H6 VHS Alignment Tape  <div> <div>Video</div> <div>Audio</div> </div> <div> Color Bar & Monoscope 6kHz(MONO) </div>	Back Tension Meter (Made in USA., Purchase Locally) 	VFKS0009 Reel Table Height Fixture 
VFKS0010 Post Adjustment Plate 	VFKS0081 Grease 	VFK0329 Post Adjustment Driver 
VFK1301 Silicon Grease 	VFK27 Head Cleaning Stick 	VFK0330 H-Position Adjustment Driver 
VUZS0002 Mode Select SW. Ass'y (VUVS0001) 	Extension Cable -1 (VUVS0002) 	Extension Cable -2 (VUVS0004) for 4 Head Model 
	Extension Cable -2 (VUVS0005) for 2 Head Model 	Extension Cable -2 (VUVS0003) for Hi-Fi Model 

MECHANICAL ADJUSTMENT

CLEANING PROCEDURE FOR THE UPPER CYLINDER UNIT

1. While slowly turning the Upper Cylinder Unit counterclockwise by hand, gently rub the Video Heads with a Head Cleaning Stick (VFK27) moistened with Ethanol. When using a Cleaning Cassette, make sure to use "DRY" type only and be aware that excessive use can shorten head life.

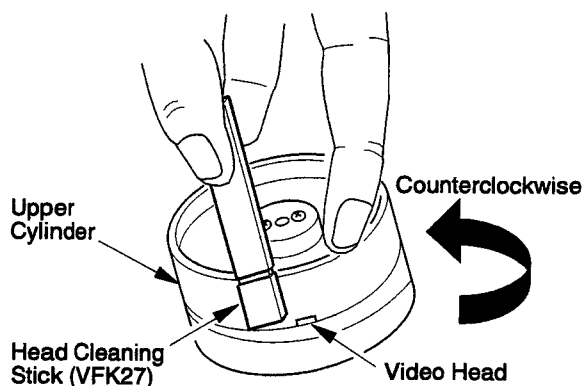


Fig. M1

Note:

- 1) Do not rub vertically or apply excess pressure to the Video Heads. Do not turn the Upper Cylinder Unit clockwise while cleaning.
- 2) After cleaning, use a Dry Head Cleaning Stick (VFK27) to remove any Ethanol remaining on the cylinder tape path. Otherwise, tape damage will occur.

ADJUSTMENT PROCEDURES

TENSION POST ADJUSTMENT

Purpose:

To maintain a constant tape tension so that the tape runs with stability by performing preliminary adjustment.

Symptom of Misadjustment:

- 1) If the adjusted value is below the specification, the tape tension is not sufficient, thus causing a tape slack.
- 2) If the adjusted value is above the specification, the tape tension is too high, thus causing tape damage.

Equipment Required:

2 mm Hex. Wrench (Purchase Locally)

1. Remove the Cassette Up Ass'y.
2. Plug the AC plug into an AC outlet.
3. Place the unit in the Service Mode. Refer to "Service Mode" in the "Service Notes" section of this manual. The power comes on and the unit goes into the PLAY Mode.
4. Using a (2 mm) Hex. Wrench, adjust the nut on the Tension Adjust Piece (counterclockwise only) so that there is a space of 1 mm between the left edge of the P1 Post and the right edge of the Tension Post. Make sure that the center of the Hex. Wrench hole is within Area "A".
5. After adjustment, remove the Hex. Wrench.
6. Press the STOP/EJECT button to place the unit in the EJECT Mode.
7. Release the unit from the Service Mode. Refer to "Service Mode" in the "Service Notes" section of this manual.

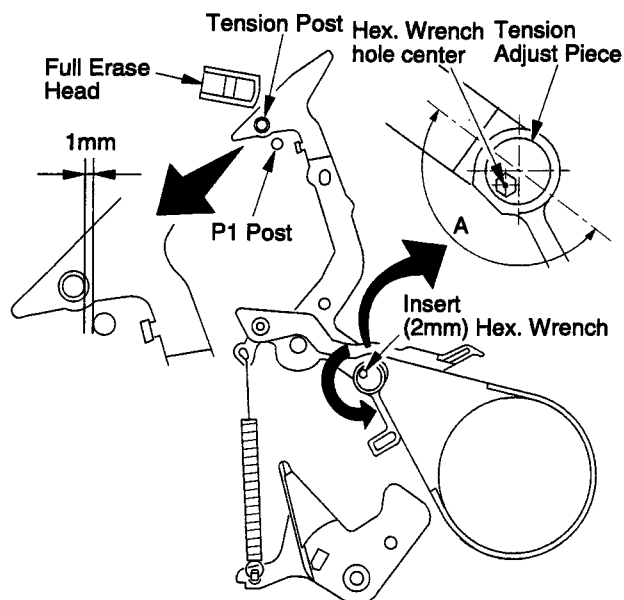


Fig. M2

BACK TENSION CONFIRMATION

Purpose:

To fine adjust the Back Tension so that the tape runs smoothly with a constant tension.

Symptom of Misadjustment:

- 1) If the tape tension is less than the specified value, the tape cannot come into proper contact with the Video Heads, resulting in poor picture playback.
- 2) If the tape tension is too high, the tape will soon be damaged.

Measurement Procedure

Equipment Required:

Back Tension Meter (Made in U.S.A., Purchase Locally)
VHS Cassette Tape (120-Minute Tape)

Specification 25 +/- 2.5g

1. Play back a T120 cassette tape from the beginning for approx. 10 to 20 seconds to stabilize tape movement.
2. Insert a Tension Meter into tape path and measure the back tension.
3. If the reading is out of specification, make sure that there is no dust or foreign material between the Tension Band of Tension Arm Unit and the Reel Table.
If cleaning does not correct the tension measurement, replace the Tension Spring and the Tension Arm Unit.

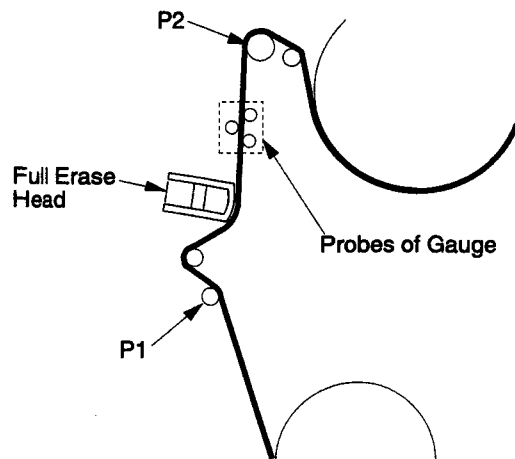


Fig. M3-1

Note:

- 1) Be sure that the three probes of the meter are all in solid contact with the tape, but not touching any other parts of the mechanism.
- 2) It is recommended that measurements be repeated at least three (3) times because the tension meter is very sensitive to external vibrations.

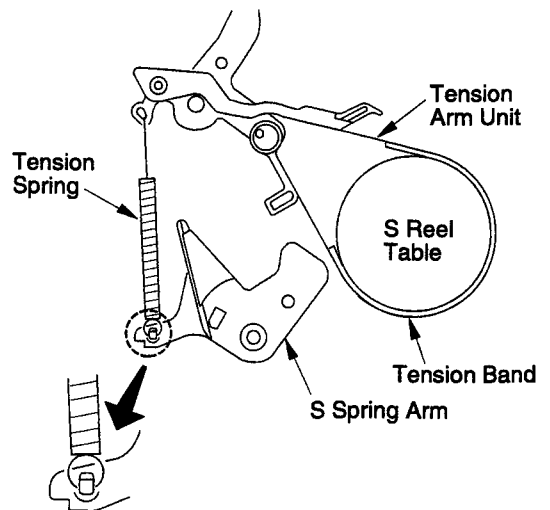


Fig. M3-2

FG HEAD GAP ADJUSTMENT

Purpose:

To properly pick up the FG Signal.

Symptom of Misadjustment:

If the FG Signal is not properly picked up, Servo Operation cannot be achieved.

Equipment Required:

Oscilloscope

Specification 0.13 +/- 0.02mm

1. Remove the VCR Chassis Unit and then place it upside down.
2. Remove the Main C.B.A.
3. Slightly loosen Black Screw (A). Then set the Screwdriver (#1 or #2 Phillips Driver) into the Hole (A). Turn the screwdriver counterclockwise until the FG Head touches the rotor. Then turn it slightly clockwise to the clearance as specified.
4. Tighten Black Screw (A).
5. Reinstall the Main C.B.A.

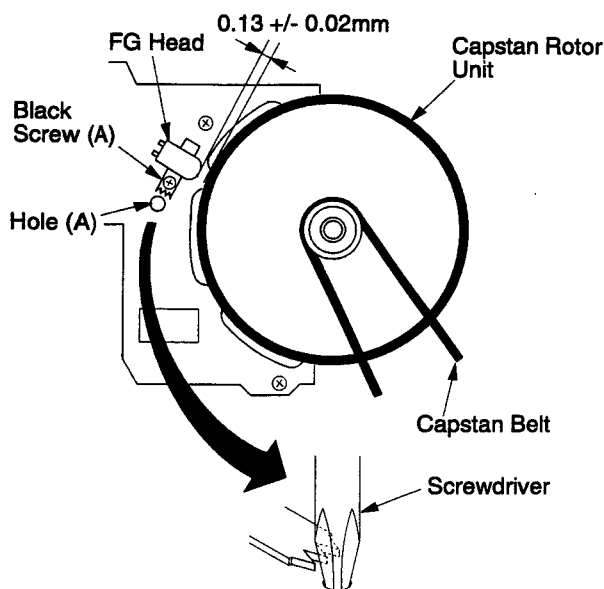


Fig. M4

Note:

Do not touch the outside circumference of the rotor surface with any tool and keep magnetic material away from the rotor magnet (especially metal particles).

Confirmation of Signal Level

- 1) Supply a Video Signal to the Video Input Jack.
- 2) Insert a cassette tape and place the unit in SLP recording mode.
- 3) Connect the oscilloscope to Pin 7 of P2502 on the Capstan Stator Unit.
Confirm that the signal level is greater than 15mVp-p.

P2 AND P3 POST HEIGHT ADJUSTMENT (PRELIMINARY ADJUSTMENT)

Purpose:

To properly align the position of the tape with the Cylinder Lead so that the tape runs with stability.

Symptom of Misadjustment:

- 1) Since the Envelope Waveform Signal cannot be tracked properly, the Playback picture will be poor.
- 2) Since the tape does not run smoothly, the tape will eventually be damaged.
- 3) Tape interchangeability is poor.

Equipment Required:

Post Adjustment Plate (VFKS0010)
Reel Table Height Fixture (VFKS0009)
Post Adjustment Driver (VFK0329)

1. Remove the Cassette Up Ass'y.
2. Position the Post Adjustment Plate over the reels.
3. Place the fixture on the Post Adjustment Plate and zero the fixture (DO NOT use the cut-out portion of the post adjustment plate.)

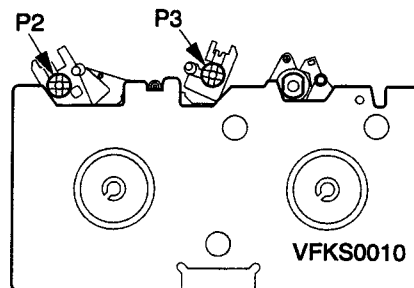


Fig. M5-1

4. Lower each post below the top edge of the Post Adjustment Plate. Then, raise each post until it contacts the foot of the Reel Table Height Fixture. For proper adjustment, the foot of that should be positioned as shown.

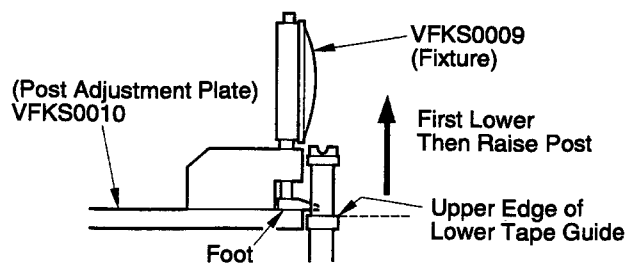


Fig. M5-2

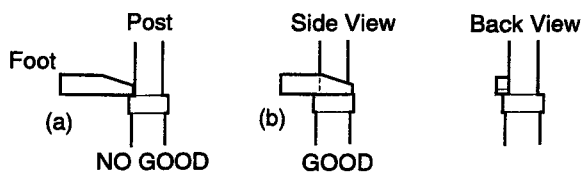


Fig. M5-3

CAUTION:

- 1) Overtightening P2 and P3 posts may cause the threads to strip.
- 2) Upon completion of this procedure, perform the "Envelope Output Adjustment" procedures.

TAPE INTERCHANGEABILITY ADJUSTMENT (FINAL ADJUSTMENT)

Note:

To perform these adjustment/confirmation procedures, set the tracking to the neutral position.

Equipment Required:

Dual Trace Oscilloscope
VHS Alignment Tape (VFMS0003H6)
Post Adjustment Driver (VFK0329)
H-Position Adjustment Driver (VFK0330)

1. ENVELOPE OUTPUT ADJUSTMENT

Purpose:

To achieve a satisfactory picture and secure precise tracking.

Symptom of Misadjustment:

If the envelope is output poorly, much noise will appear in the picture. Then the tracking will lose precision and the playback picture will be distorted by any slight variation of the tracking control circuit.

Equipment Required:

Post Adjustment Driver (VFK0329)

1. Connect the oscilloscope to TP3002 on the Main C.B.A. Use TP6205 as a trigger.
2. Place a jumper between TP6003 and +5V (TP6009) on the Main C.B.A. to defeat Auto Tracking.
3. Eject the tape and insert it again to access the Neutral Tracking position.
4. Play back the alignment tape and confirm that the RF envelope appears.
5. With Post Adjust Driver, adjust P2 and P3 post height so that the envelope waveform (V_1/V_{max} is 0.7 or more.) becomes as flat as possible (No envelope drop). If the envelope drop appears on the left-half of the waveform, adjust P2 post height. If the envelope drop appears on the right-half of the waveform, adjust P3 post height.

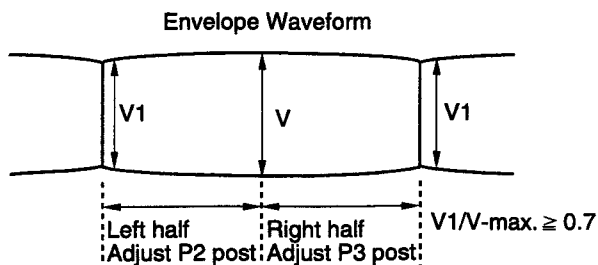


Fig. M6-1

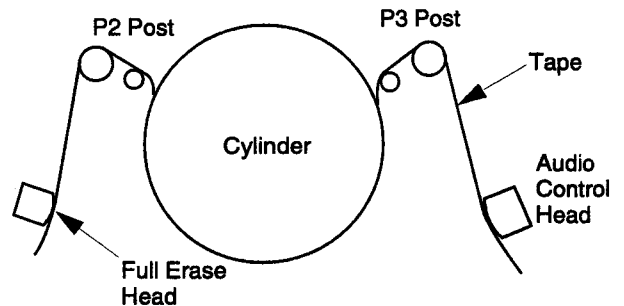


Fig. M6-2

Note:

To confirm adjustment, press the Tracking Control Up or Down button on remote control. Make sure that the envelope waveform remains flat. If not, readjust P2 and/or P3 post heights.

6. After adjustment, confirm that the tape travels without curling at P2 and P3 posts.
7. Remove the jumper after completing the adjustment procedure.

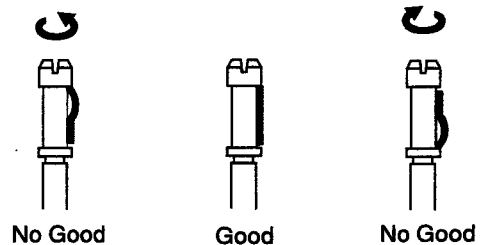


Fig. M6-3

Note:

Overtightening P2 and P3 posts may cause the threads to strip.

2. AUDIO CONTROL HEAD TILT ADJUSTMENT

Purpose:

To confirm that the tape runs smoothly. In particular, confirm that the tape properly picks up the Audio Signal at the upper part of the head and the Control Signal at the lower part of the head.

Symptom of Misadjustment:

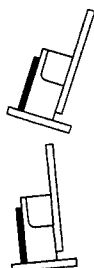
If the tilt of the Audio Control Head is poorly adjusted, the tape will eventually be damaged. An intermittent Blue screen may be seen in Playback.

1. Play back a T120 cassette tape and check that the tape travels smoothly between the upper and lower guides of the P4 post.
2. If necessary, adjust Black Screw (B) clockwise until the tape begins to curl at the lower edge of the P4 post. Then adjust the screw counterclockwise until the curling is eliminated.

Tape Running Condition



Audio Control Head in Tilted Condition



Direction to turn for Correction



Fig. M7

3. AUDIO CONTROL HEAD HEIGHT ADJUSTMENT

The height of the Audio Control Head replacement part is preset at the factory.

Purpose:

To be sure the tape runs properly along the Control Head.

Symptom of Misadjustment:

If the control signal is not properly picked up, Servo Operation cannot be achieved. A Blue screen will be seen in Playback.

This confirmation is required when the Audio Control Head is replaced.

1. Play back a T120 cassette tape and check that the lower edge of the tape runs approximately 0.25 mm above the lower edge of the Audio Control Head.
2. If necessary, adjust Black Screws (A) and (B) clockwise to lower the tape or counterclockwise to raise.

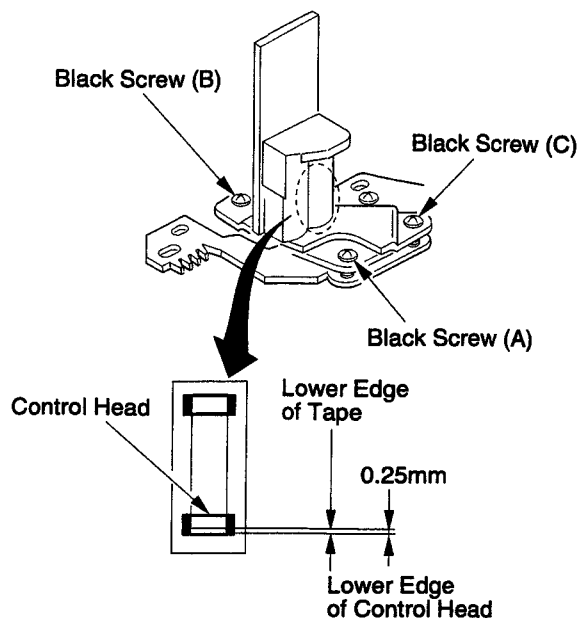


Fig. M8

4. AUDIO CONTROL HEAD AZIMUTH ADJUSTMENT

Purpose:

To adjust the position and height of the Audio Control Head so that it meets the tape tracks properly.

Symptom of Misadjustment:

If the position of the Audio Control Head is not properly adjusted, the Audio S/N Ratio is poor.

1. Connect the oscilloscope to the TP4002 on the Main C.B.A.
2. Play back the 6kHz Monaural Audio portion of the alignment tape.
3. Adjust Black Screw (C) on the Audio Control Head base so that the output level is at maximum.

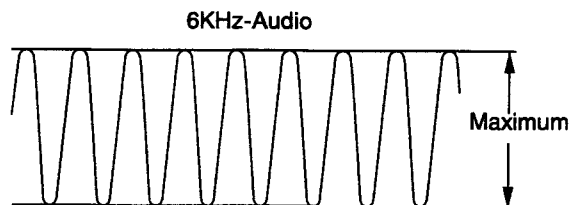


Fig. M9

4. Confirm the height of the Audio Control Head is proper. If not, readjust Black Screws (A) and (B).

5. AUDIO CONTROL HEAD HORIZONTAL POSITION ADJUSTMENT

Purpose:

To adjust the Horizontal Position of the Audio Control Head.

Symptom of Misadjustment:

If the Horizontal Position of the Audio Control Head is not properly adjusted, a maximum envelope cannot be obtained at the Neutral Position of the Tracking Control Circuit.

1. Connect the oscilloscope to TP3002 on the Main C.B.A. Use TP6205 as a trigger.
2. Place a jumper between TP6003 and +5V(TP6009) on the Main C.B.A. to defeat Auto Tracking.
3. Eject the tape and insert it again to access the Neutral Tracking position.
4. Play back the alignment tape and confirm that the RF envelope appears.
5. If adjustment is required, loosen the Black Screw (D) and tighten it lightly. Set the H-Position Adjustment Driver into the Hole (A). Then slowly turn the fixture either clockwise or counterclockwise so that the envelope is at maximum.
6. Before finding the center of the maximum period of the envelope, rotate the fixture back and forth slightly to confirm the limits on either side of the maximum period.
7. Push the Tracking Control Up Button (on the Remote Control) several times (count the number of times pushed) until the maximum envelope is reduced to 1/2.
8. Reset the tracking to the neutral position by ejecting the tape and reinserting it. Push the Tracking Control Down Button (on the Remote Control) several times (count the number of times pushed) until the maximum envelope is reduced to 1/2.
9. If the number of pushing is not the same, then loosen the Black Screw (D) and set the H-Position Adjustment Driver into the Hole (A) to find the center point. Then repeat the above procedure to determine the center point.
10. Tighten Black Screw (D).
(The Black Screw (D) should be in the approximate center of the hole.)
11. Remove the jumper between TP6003 and +5V(TP6009).

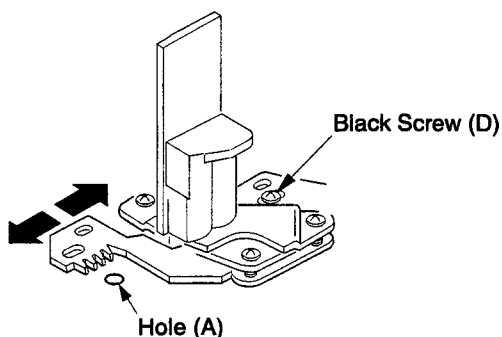


Fig. M10

Note:

Old type of H-Position Adjustment Driver (VFK0136) can be used for this adjustment.

ELECTRICAL ADJUSTMENT

Note:

Picture Tube Ass'y is preadjusted at factory and should not be disturbed unless absolutely necessary.

TEST EQUIPMENT

To do all of these electrical adjustments, the following equipment is required.

1. Dual-Trace Oscilloscope
Voltage Range : 0.001 to 50V/Div.
Frequency Range : DC to 50MHz
Probes : 10:1, 1:1
2. NTSC Video Pattern Generator
3. MTS/SAP Signal Generator
(TV Multi-Channel Sound Modulator (U.S.A.))
4. Frequency Counter
Frequency Range : 0 to 150MHz
5. Plastic Tip Driver and Non-Metal Driver
6. Isolation Transformer (Variable)
7. VHS Alignment Tape (VFMS0003H6)
8. White Pattern Generator

HOW TO READ THE ADJUSTMENT PROCEDURES

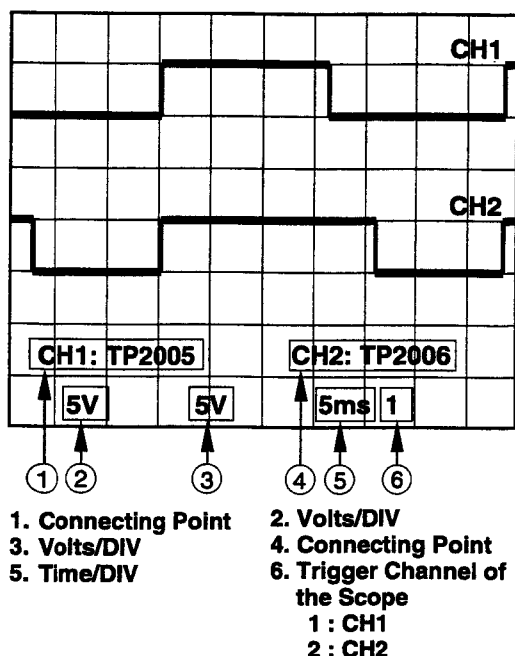


Fig. E1

FM VCO ADJUSTMENT

Purpose:

To set VCO free run frequency.

Symptom of Misadjustment:

Even when stereophony is received, only monaural sound will be output.

Test Point : Pin 8 of P4202,

TP9201 (Hi-Fi Audio C.B.A.)

Adjustment : R9206 (Hi-Fi Audio C.B.A.)

Specification: 38.0KHz +/- 50Hz

Input :

Mode : STEREO audio (FM Radio)

Equipment : Frequency Counter

1. Connect Pin 8 of P4202 on Audio C.B.A. to GND.



Fig. E2-1

2. Connect TP9201 on Hi-Fi Audio C.B.A. to GND through a resistor (3.3k ohm). Then, connect Frequency Counter to TP9201.

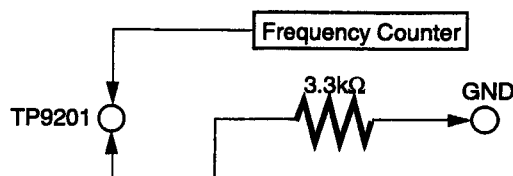


Fig. E2-2

3. Adjust R9206 (FM VCO) so that the frequency is 38.0KHz +/- 50Hz.

SEPARATION ADJUSTMENT

Purpose:

To separate the L and R Channels of Stereo Signal.

Symptom of Misadjustment:

The L and R Channels of Stereo Signal will not be separated properly resulting in no stereophonic effect.

Test Point : TP9001, TP9003 (Hi-Fi Audio C.B.A.)

Adjustment : R9001, R9003, R9008 (Hi-Fi Audio C.B.A.)

Specification: shown below

INPUT :

Antenna Input Terminal
MTS (ONLY L CH)
300Hz +/- 5Hz, 3kHz +/- 5Hz
14% or 7% Modulating

Mode :

STEREO audio (TV)

Equipment :

Oscilloscope, MTS/SAP Signal Generator

1. Set to TV mode, and then set to STEREO audio.
2. Connect the RF OUTPUT of the MTS/SAP Signal Generator to the Antenna Input Terminal.
Then, set the MTS/SAP Signal Generator as follows:
MTS
300Hz +/- 5Hz
100% Modulating
3. Connect the Oscilloscope to TP9003 on the Hi-Fi Audio C.B.A.
4. Adjust R9003 on the Hi-Fi Audio C.B.A. so that the voltage is 100mVrms (119mVp-p).
5. Set the MTS/SAP Signal Generator as follows.
MTS (ONLY L CH)
300Hz +/- 5Hz
14% or 7% Modulating
6. Connect the Oscilloscope to TP9001 on the Hi-Fi Audio C.B.A.
7. Adjust R9001 (SEP (L)) on the Hi-Fi Audio C.B.A. so that the signal level of TP9001 is minimum.
8. Set the MTS/SAP Signal Generator as follows.
MTS (ONLY L CH)
3kHz +/- 5Hz
14% or 7% Modulating
9. Adjust R9008 (SEP (H)) on the Hi-Fi Audio C.B.A. so that the signal level of TP9001 is minimum.

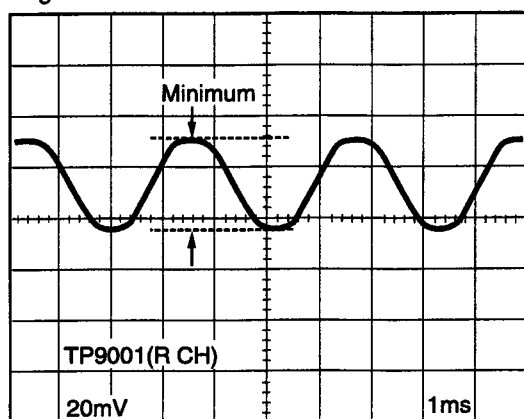


Fig. E3

OSD CUT -OFF/CONTRAST ADJUSTMENT

Note:

Before making OSD Cut-off adjustment, Sub Brightness Adjustment must be completely done.
If not, OSD Cut-off adjustment can not be adjusted properly.

Purpose:

To set the optimum cut-off level and contrast level for OSD.

Symptom of Misadjustment:

OSD will be too dark or too light.

Test Point : TP49, TP51, TP52 (CRT C.B.A.)

Adjustment : R5704, R5715, R5725, R5701, R5710, R5722 (Hi-Fi Audio C.B.A.)

Specification: shown below

INPUT : -----
Mode : STOP
Equipment : Oscilloscope

1. Do not input any signal to the unit.
2. Select input mode to "LINE" using Remote Control Unit.
3. Press "ACTION" button to indicate menu screen.
4. Connect the oscilloscope to TP49 on the CRT C.B.A.
5. Adjust R5704 on the Hi-Fi Audio C.B.A. so that the Level A and B will be equal in amplitude.
6. Connect the oscilloscope to TP51 on the CRT C.B.A.
7. Adjust R5715 on the Hi-Fi Audio C.B.A. so that the Level A and B will be equal in amplitude.
8. Connect the oscilloscope to TP52 on the CRT C.B.A.
9. Adjust R5725 on the Hi-Fi Audio C.B.A. so that the Level A and B will be equal in amplitude.
10. Connect the oscilloscope to TP49 on the CRT C.B.A.
11. Adjust R5701 on the Hi-Fi Audio C.B.A. so that the Level C becomes 2.0 +/- 0.1Vp-p.
12. Connect the oscilloscope to TP51 on the CRT C.B.A.
13. Adjust R5710 on the Hi-Fi Audio C.B.A. so that the Level C becomes 2.0 +/- 0.1Vp-p.
14. Connect the oscilloscope to TP52 on the CRT C.B.A.
15. Adjust R5722 on the Hi-Fi Audio C.B.A. so that the Level C becomes 2.0 +/- 0.1Vp-p.

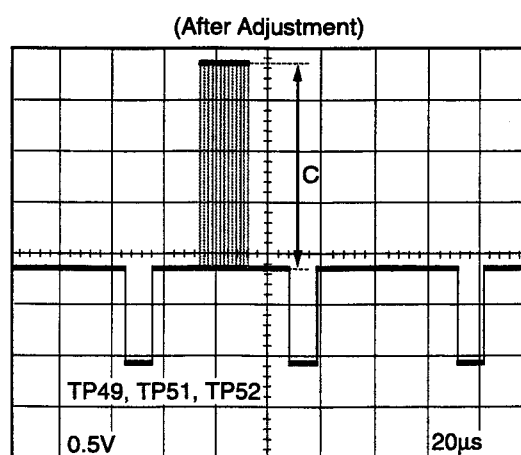
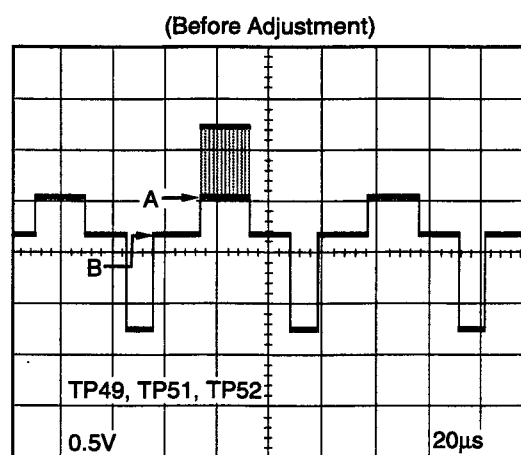


Fig. E4

EVR (Electronic Variable Register) ADJUSTMENT WITH THE REMOTE CONTROL

This unit has electronic technology using I²C Bus concept. The following control functions are adjusted by using "On Screen Displays" and the remote control instead of adjusting mechanical controls (VR).

Control functions	※2 Address	Range	Default
SUB COLOR	00	C0 – FF, 00 – 3F	00
SUB TINT	01	E0 – FF, 00 – 1F	00
SUB BRIGHT	02	C0 – FF, 00 – 3F	F0
CONTRAST	03	C1 – FF, 00	00
SUB SHARPNESS	04	E0 – FF, 00 – 1F	E8
R CUT -OFF	05	00 – 7F	1E
G CUT -OFF	06	00 – FD	3C
B CUT -OFF	07	00 – FD	3C
G DRIVE	08	00 – 7F	40
B DRIVE	09	00 – 7F	40
SUB CONTRAST	0A	00 – 0F	06
H CENTER	0B	00 – 0F	08
SUB V	0C	00 – 03	00
V SIZE	0D	00 – 7F	40
V POSITION	0E	00 – 7F	40
VV COLOR ※1	12	C0 – FF, 00 – 3F	00
VV TINT ※1	13	E0 – FF, 00 – 1F	00
VV SHARPNESS	14	E0 – FF, 00 – 1F	E3
PG SHIFTER	15	01 – FD	80
DVD COLOR ※1	18	C0 – FF, 00 – 3F	00
DVD TINT ※1	19	E0 – FF, 00 – 1F	00
DVD SHARPNESS	1A	E0 – FF, 00 – 1F	E8

Bold-faced letters → Control functions which need to be adjusted.

Note:

- ※1 After "SUB COLOR/SUB TINT ADJUSTMENT" is completed, perform as follows.
 - Write the same value of SUB COLOR (Address 00) to VV COLOR (Address 12) and DVD COLOR (Address 18).
 - Write the same value of SUB TINT (Address 01) to VV TINT (Address 13) and DVD TINT (Address 19).
- ※2 Address is not displayed on the TV screen. Other Addresses except above are not used.

EVR ADJUSTMENT ITEM

The following Items need to be adjusted for EVR adjustment.

- PG SHIFTER ADJUSTMENT
- SUB CONTRAST ADJUSTMENT
- CUT OFF, DRIVE ADJUSTMENT
- SUB COLOR/SUB TINT ADJUSTMENT
- V. HEIGHT/H. POSITION ADJUSTMENT
- WHITE BALANCE ADJUSTMENT
- SUB BRIGHTNESS ADJUSTMENT

HOW TO ENTER EVR ADJUSTMENT MODE

Set the unit to TV Mode. Then press and hold STOP, PLAY, and VOL DOWN buttons of VCR operation panel of the unit together over 5 seconds with no cassette inserted. The adjustment overlay will appear.

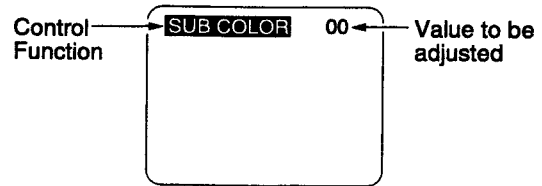


Fig. E5-1

How to adjust:

1. Press SELECT UP/DOWN key on the remote control to select control function to be adjusted.

Important Note:

Make a note of the original value of the controls before modifying in case the wrong control is adjusted.

2. Press SELECT RIGHT/LEFT key on the remote control so that the shaded area moves to the value.

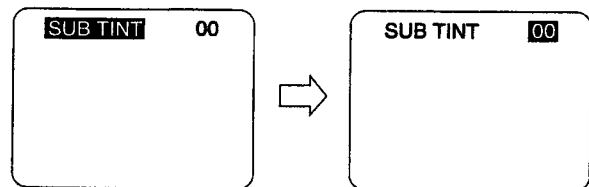


Fig. E5-2

3. Press SELECT UP/DOWN key on the remote control to adjust the value of the selected control.

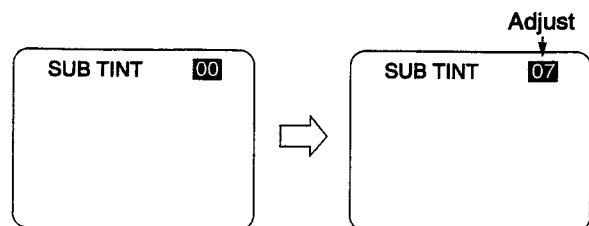


Fig. E5-3

Note:

You can select a desired channel by using the numbered keys on the remote control in EVR adjustment mode.

4. Press SELECT RIGHT/LEFT key on the remote control so that the shaded area moves to the control function.

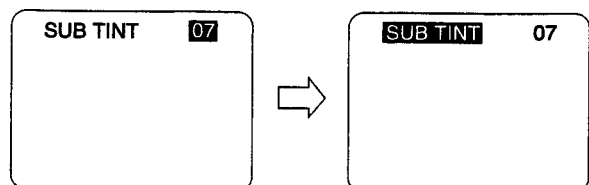


Fig. E5-4

5. Press SELECT UP/DOWN key on the remote control to select a control function for the next adjustment if necessary.

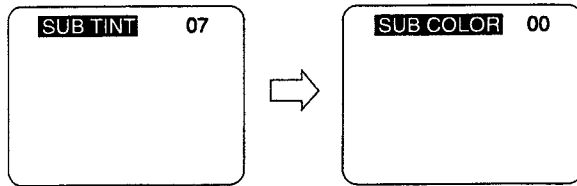


Fig. E5-5

How to release from EVR Adjustment Mode:

Press and hold STOP, PLAY, and VOL DOWN buttons on VHS operation of the unit together over 5 seconds again or press the POWER button OFF.
The adjusted value will be written to Memory IC (IC6004).

HOW TO ENTER EVR PG SHIFTER ADJUSTMENT MODE

1. Enter EVR adjustment mode.
2. Insert the VHS Alignment Tape and playback in SP mode.
The adjustment overlay will appear.

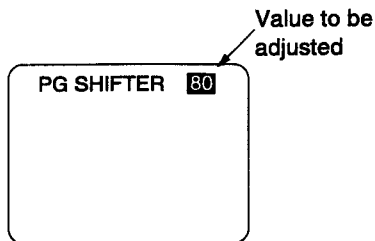


Fig. E5-6

How to adjust:

Press SELECT UP/DOWN key on the remote control to adjust the value.

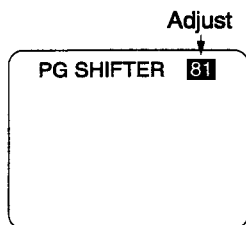


Fig. E5-7

How to release from EVR PG Shifter Adjustment Mode:

Press STOP button or press the POWER button OFF.
The adjusted value will be written to Memory IC (IC6004).

HOW TO ENTER SERVICE MODE

1. Set the unit to TV mode.
2. Enter EVR adjustment mode.
3. Press DISPLAY key on the remote control for collapse scan.

Note:

Before pressing DISPLAY key on the remote control for collapse scan, select the desired control function and move the shaded area to the value for adjustments you will proceed.

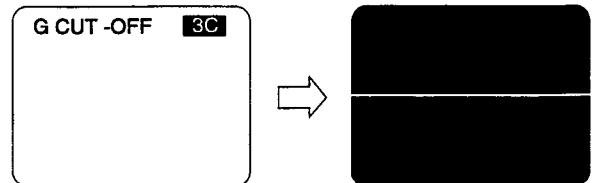


Fig. E5-8

How to release from Service Mode:

Press DISPLAY key again on the remote control.

PG SHIFTER ADJUSTMENT

Purpose:

Determine the Video Head Switching Point during Playback.

Symptom of Misadjustment:

May cause Head Switching Noise and/or Vertical Jitter.

Test Point : TP3001 (Main C.B.A.)
TP6205 (Main C.B.A.)

Adjustment : PG SHIFTER (EVR)

Specification : $T = 6 \pm 1H$ ($0.38 \pm 0.06\text{msec.}$)

Input : -----

Mode : SP Playback

Equipment : Oscilloscope,
VHS Alignment Tape (VFMS0003H6)

1. Enter EVR PG Shifter Adjustment mode, refer to "How to Enter EVR PG Shifter Adjustment Mode."
2. Connect the channel-1 scope probe to TP3001 and the channel-2 scope probe to TP6205. Trigger from channel-2.
3. Adjust value so that the trailing edge of the head switching pulse is placed $6H \pm 1H$ ($0.38 \pm 0.06\text{msec.}$) before the start of the vertical sync pulse.
4. Release EVR PG Shifter Adjustment Mode.
The adjusted value will be written to Memory IC (IC6004).

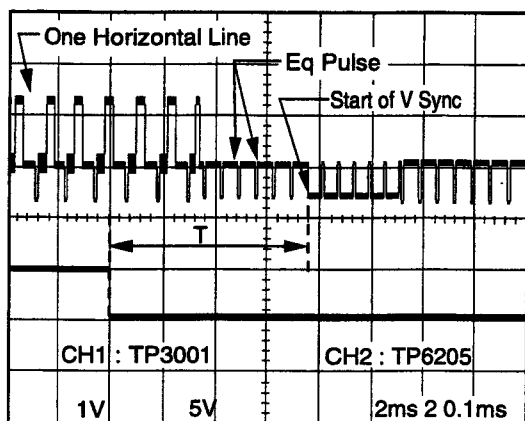


Fig. E6

SUB CONTRAST ADJUSTMENT

Purpose:

To set the optimum sub contrast level.

Symptom of Misadjustment:

The picture is too dark or too light.

Test Point : Pin 5 of P7004 (DVD Sub C.B.A.)
or TP49 (CRT C.B.A.)

Adjustment : SUB CONTRAST (EVR)

Specification : $2.5 \pm 0.1V_{p-p}$

Input : Video Input Jack
Crosshatch Pattern Signal $1V_{p-p}$
(75 ohm terminated)

Mode : STOP

Equipment : Oscilloscope, NTSC Video Pattern Generator

1. Supply a Crosshatch Pattern Signal to the Video Input Jack.
2. Connect the Oscilloscope to Pin 5 of P7004 on the DVD Sub C.B.A. or TP49 on the CRT C.B.A.
3. Select SUB BRIGHT in EVR adjustment mode. Then, after making a note of the original value, adjust to the (D0).
4. Select SUB CONTRAST in EVR adjustment mode and adjust so that the level A is $2.5 \pm 0.1V_{p-p}$.
5. Select SUB BRIGHT in EVR adjustment mode and reset to the original value.

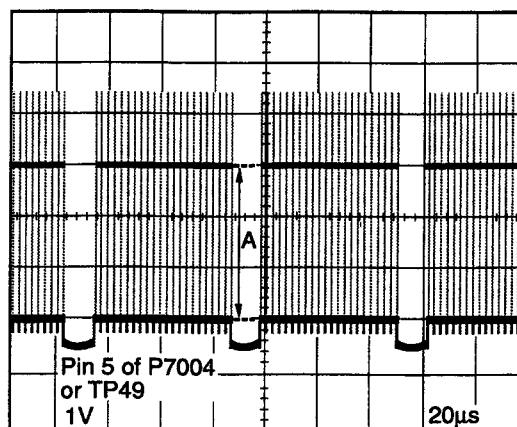


Fig. E7

FOCUS, SCREEN, CUT OFF, DRIVE ADJUSTMENT

Purpose:

To set the optimum Focus and Screen.

Symptom of Misadjustment:

The picture is out of Focus and there will be an improper screen color mix.

Test Point : TP50 (CRT C.B.A.)

Adjustment : FOCUS CONTROL (Flyback Transformer),
SCREEN CONTROL (Flyback Transformer),
SUB BRIGHT (EVR),
G DRIVE (EVR),
B DRIVE (EVR),
B CUT -OFF (EVR),
G CUT -OFF (EVR),
R CUT -OFF (EVR)

Specification: Refer to descriptions below.

Input : Video Input Jack
Monoscope Pattern Signal

Mode : STOP

Equipment : Oscilloscope, NTSC Video Pattern Generator

1. Supply a Monoscope Pattern Signal to the Video Input Jack.
2. Connect the Oscilloscope to TP50 on the CRT C.B.A. (Use TP47 for GND.)
3. Select SUB BRIGHT and move the shaded area to the value in EVR adjustment mode.
4. Adjust the FOCUS CONTROL on the Flyback Transformer so that the center of picture is the sharpest.
5. Press DISPLAY key (Service Switch) on the remote control for collapse scan. (Refer to How to Enter Service Mode.)
6. Turn the SCREEN CONTROL on the Flyback Transformer fully counterclockwise.
7. Adjust SUB BRIGHT in EVR adjustment mode so that the level A is 185 +/- 5VDC.

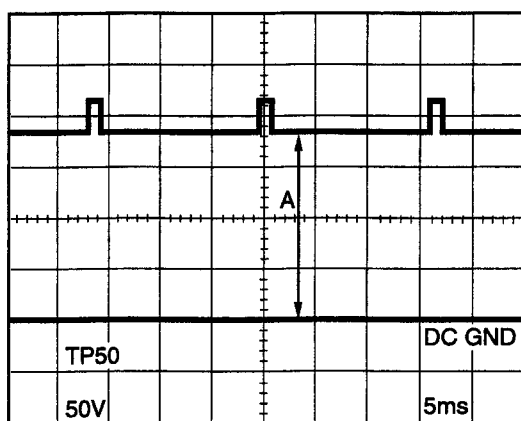


Fig. E8

8. Turn the SCREEN CONTROL on the Flyback Transformer clockwise carefully and stop at the point where any color is first observed.
9. In EVR adjustment mode, select the two colors not observed in step 8 from the following control functions (B CUT -OFF, G CUT -OFF, or R CUT -OFF) and adjust so that the horizontal line becomes white.
For example, if the horizontal line appeared red in step 8, select and adjust the B CUT -OFF and G CUT -OFF.

10. Press DISPLAY key on the remote control again to return for full frame scan.
11. Select SUB BRIGHT in EVR adjustment mode and adjust so that the picture has adequate brightness.
12. Select G DRIVE and B DRIVE in EVR adjustment mode and adjust so that the entire screen is white.

Note:

Before pressing DISPLAY key on the remote control for collapse scan, select the desired control function and move the shaded area to the value.

SUB COLOR/SUB TINT ADJUSTMENT

Purpose :

To set the standard color phase.

Symptom of Misadjustment :

Color phase will be shifted.

Test Point : Pin 5 of P7004 (DVD Sub C.B.A.)
or TP49 (CRT C.B.A.)

Adjustment : SUB COLOR (EVR),
SUB TINT (EVR)

Specification: C = 1.30 +/- 0.15Vp-p

Input : Video Input Jack
Rainbow Color Bar

Mode : STOP

Equipment : Oscilloscope, NTSC Video Pattern Generator

1. Supply the Rainbow Color Bar signal to Video Input Jack.
2. Select SUB BRIGHT in EVR adjustment mode. Then, after making a note of the original value, adjust to the minimum (D0).
3. Connect the Oscilloscope to Pin 5 of P7004 on the DVD Sub C.B.A. or TP49 on the CRT C.B.A.
4. Select SUB TINT in EVR adjustment mode and adjust so that level A and B should be equal in amplitude.

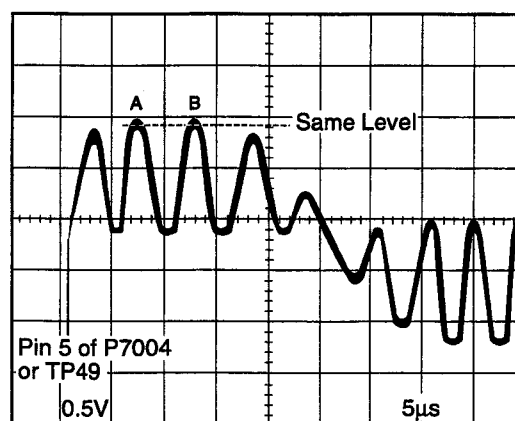


Fig. E9-1

5. Select SUB COLOR in EVR adjustment mode and adjust so that the level C is $1.30 \pm 0.15V_{p-p}$

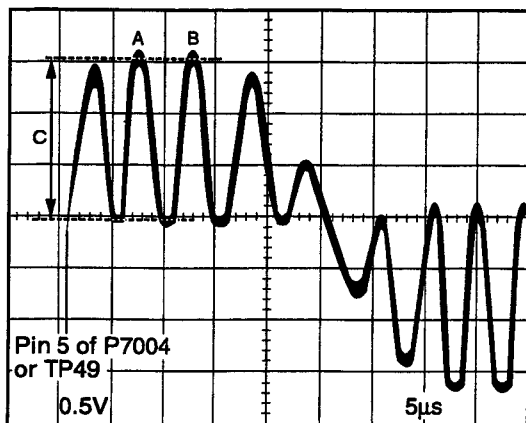


Fig. E9-2

6. Select SUB BRIGHT in EVR adjustment mode and reset to the original value.

Note:

After "SUB COLOR/SUB TINT ADJUSTMENT" is complete, perform as follows.

- Write the same value of SUB COLOR (Address 00) to VV COLOR (Address 12) and DVD COLOR (Address 18) .
- Write the same value of SUB TINT (Address 01) to VV TINT (Address 13) and DVD TINT (Address 19) .

V. HEIGHT/H. POSITION ADJUSTMENT

Purpose :

To set the standard vertical and horizontal picture size.

Symptom of Misadjustment :

The picture size is on the vertical and horizontal axis is abnormal.

Test Point : ———

Adjustment : V SIZE (EVR),
H CENTER (EVR)

Specification: Refer to descriptions below.

Input : Video Input Jack
Monoscope Pattern Signal

Mode : STOP

Equipment : NTSC Video Pattern Generator

1. Supply a Monoscope Pattern Signal to the Video Input Jack.
2. Select V SIZE in EVR adjustment mode and adjust so that the top 4th line is just in view.
3. Confirm that the bottom 3rd line is in view and that the bottom 4th line is out of view.
If the lines are not positioned correctly, readjust V SIZE so that the 11th line is just in view.
4. Select H CENTER in EVR adjustment mode and adjust so that A is approximately equal to width B.

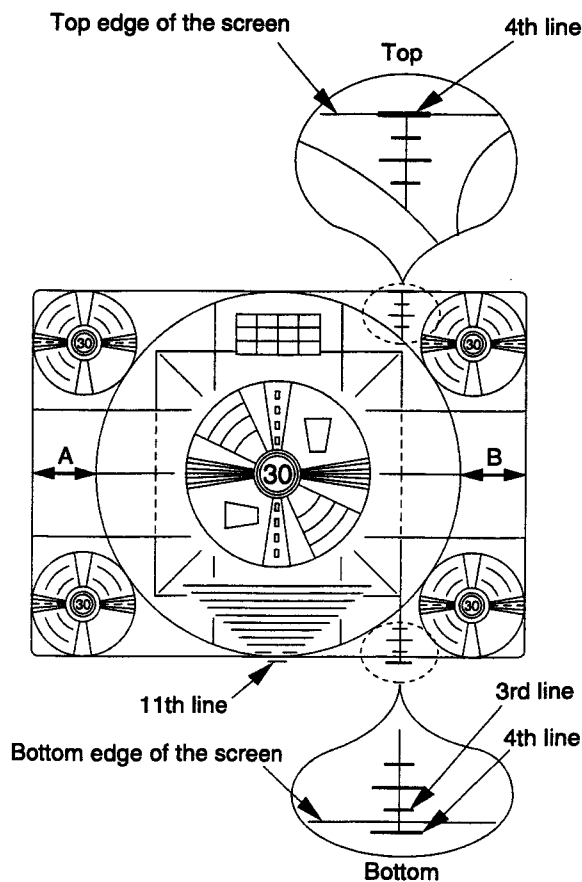


Fig. E10

WHITE BALANCE ADJUSTMENT

Purpose:

To set the standard white level for each color temperature.

Symptom of Misadjustment :

White becomes bluish or reddish.

Test Point : TP50 (CRT C.B.A)

Adjustment : FOCUS CONTROL (Flyback Transformer),
SCREEN CONTROL (Flyback Transformer),
SUB BRIGHT (EVR)
G DRIVE (EVR),
B DRIVE (EVR),
R CUT -OFF (EVR),
G CUT -OFF (EVR),
B CUT -OFF (EVR),

Specification: Refer to descriptions below.

Input : Video Input Jack
Monoscope Pattern Signal,
White Pattern Signal

Mode : STOP

Equipment : NTSC Video Pattern Generator,
White Pattern Generator, Oscilloscope,

1. Supply a Monoscope Pattern Signal to the Video Input Jack.
2. Connect the Oscilloscope to TP50 on the CRT C.B.A. (Use TP47 for GND.)
3. Select SUB BRIGHT and move the shaded area to the value in EVR adjustment mode.
4. Adjust the FOCUS CONTROL on the Flyback Transformer so that the center of picture is the sharpest.
5. Press DISPLAY key (Service Switch) on the remote control for collapse scan. (Refer to How to Enter Service Mode.)
6. Turn the SCREEN CONTROL on Flyback Transformer fully counterclockwise.
7. Adjust SUB BRIGHT in EVR adjustment mode so that the level A is 185 ± 5 VDC.

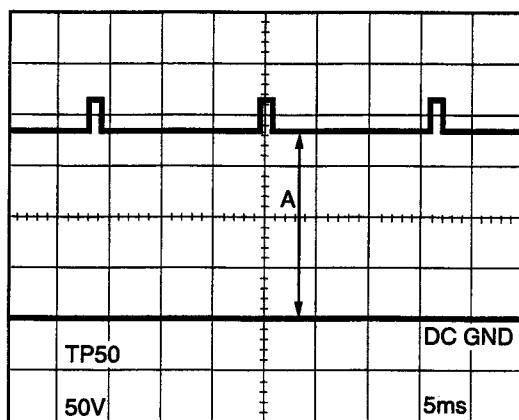


Fig. E11

8. Turn the SCREEN CONTROL on the Flyback Transformer clockwise carefully and stop at the point where any color is first observed.
9. In EVR adjustment mode, select the two colors not observed in step 8 from the following control functions (B CUT -OFF, G CUT -OFF, or R CUT -OFF) and adjust so that the horizontal line becomes white.
For example, if the horizontal line appeared red in step 8, select and adjust the B CUT -OFF and G CUT -OFF.

10. Supply a White Pattern Signal to the Video Input Jack.
11. Press DISPLAY key on the remote control again to return for full frame scan.
12. Select G DRIVE and B DRIVE in EVR adjustment mode and adjust so that the entire screen is white.
13. Select SUB BRIGHT in EVR adjustment mode. Then, after making a note of the original value, adjust to the minimum (C0) and while turning SUB BRIGHT value from minimum (C0) up to maximum (3F), confirm that the screen is tracking the White Pattern properly.
Repeat the above steps 5, 9, 11, and 12 until the screen is properly tracking the White Pattern.

Note:

Before pressing DISPLAY key on the remote control for collapse scan, select the desired control function and move the shaded area to the value.

SUB BRIGHTNESS ADJUSTMENT

Purpose :

To set the optimum brightness level.

Symptom of Misadjustment :

The picture is too white or too black.

Note:

Perform this adjustment in a darkened room.

Test Point : _____

Adjustment : SUB BRIGHT (EVR)

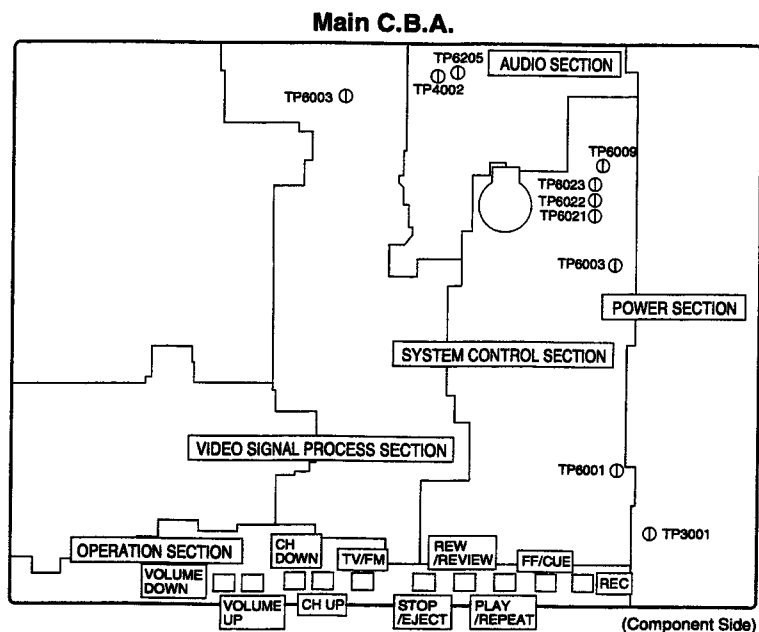
Specification: Refer to descriptions below.

Input : _____

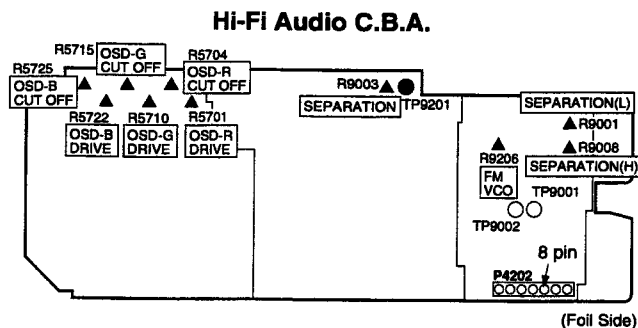
Mode : STOP

1. Do not input any signal to the unit.
2. Set INPUT SELECT item to LINE in SET UP TV menu to display black screen.
3. Select SUB BRIGHT in EVR adjustment mode, and adjust so that the black screen starts to turn grey (lighting only).

TEST POINTS AND CONTROL LOCATION



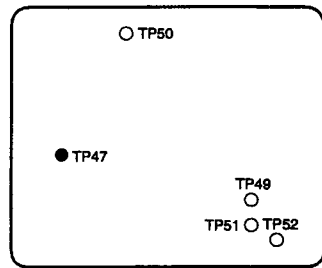
Function of Important Test Points on Main C.B.A.		
TP3001	Video signal	
TP3002	REC/PB video envelope signal	
TP4002	Normal Audio signal	
TP6001	Service Test Point (inhibit sensors) (connect to GND)	
TP6003	defeat auto tracking function (connect to +5V(TP6009))	
TP6009	+5V	
TP6205	Head Switching Signal	
TP6021	Mode Select SW. Position	Mode Position (A)
TP6022		Mode Position (B)
TP6023		Mode Position (C)



Test Point Information

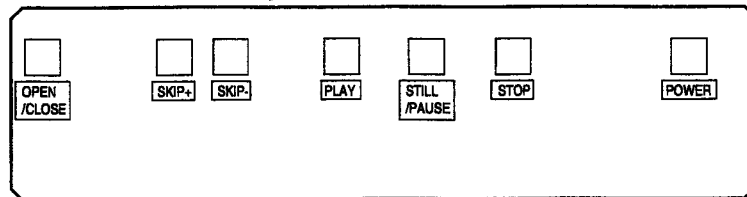
- Test Point with a Test Pin.
- ⊙ Test Point with a jumper wire across a hole in the P.C.B.
- Test Point with no Test Pin.

CRT C.B.A.



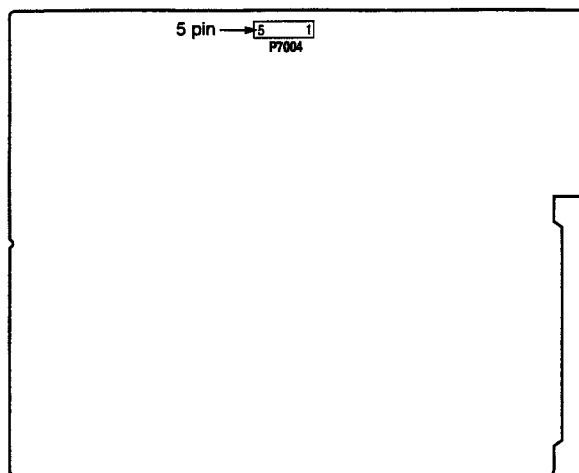
(Foil Side)

Operation C.B.A.



(Component Side)

DVD Sub C.B.A.



(Foil Side)

– MEMO –

SCHEMATIC DIAGRAMS

SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES

1. Important safety notice

Components identified by the sign Δ have special characteristics important for safety. When replacing any of these components, use only the specified parts.

2. Do not use the part number shown on this drawing for ordering. The correct part number is shown in the parts list, and may be slightly different or amended since this drawing was prepared.

3. Use only original replacement parts:
To maintain original function and reliability of repaired units, use only original replacement parts which are listed with their part numbers in the parts list section of the service manual.

4. Parts different in shape or size may be used.
However, only interchangeable parts will be supplied as service replacement parts.

5. Test point information

- ① :Test point with a jumper wire across a hole in P.C.B.
- :Test point with a component lead on the foil side.
- ⊗ :Test point with no test pin.
- :Test point with a test pin.

Schematic Diagram Notes

1. Indication for Zener Voltage of Zener Diodes
The Zener Voltage of Zener Diodes are indicated as such on Schematic Diagrams.

Example:
(6.2V).....Zener Voltage

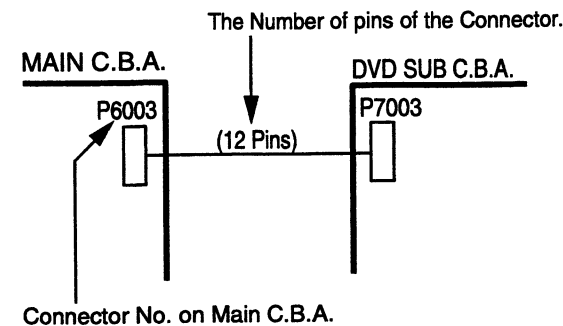
2. How to identify Connectors

Each connector is labeled with a Connector No. and Pin No. Indicating what it is connected to, in other words, its counter part.

Use the interconnection schematic diagram to find the connection between associated connectors.

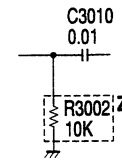
Example:

The connections between C.B.A.s are shown below.



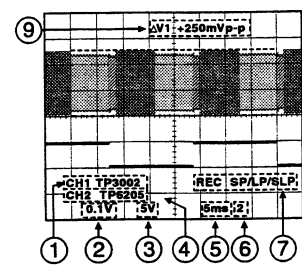
3. Parts enclosed in dashed lines marked "Z" are not used in any models included in this service manual.

Example:



Signal Waveform Note

How to read Signal Waveform



- ① Connecting Point
- ② Volts/Div
- ③ Volts/Div
- ④ Connecting Point
- ⑤ Time/Div
- ⑥ Trigger Channel of the scope (1:CH1,2:CH2)
- ⑦ Operation Mode of VCR
- ⑧ Waveform Point on Schematic
- ⑨ $\Delta V1$:Peak to Peak

Voltage Chart Note

Voltage Measurement

- a. Color chip signal in REC mode.
- b. ---:Unmeasurable or not necessary to measure.

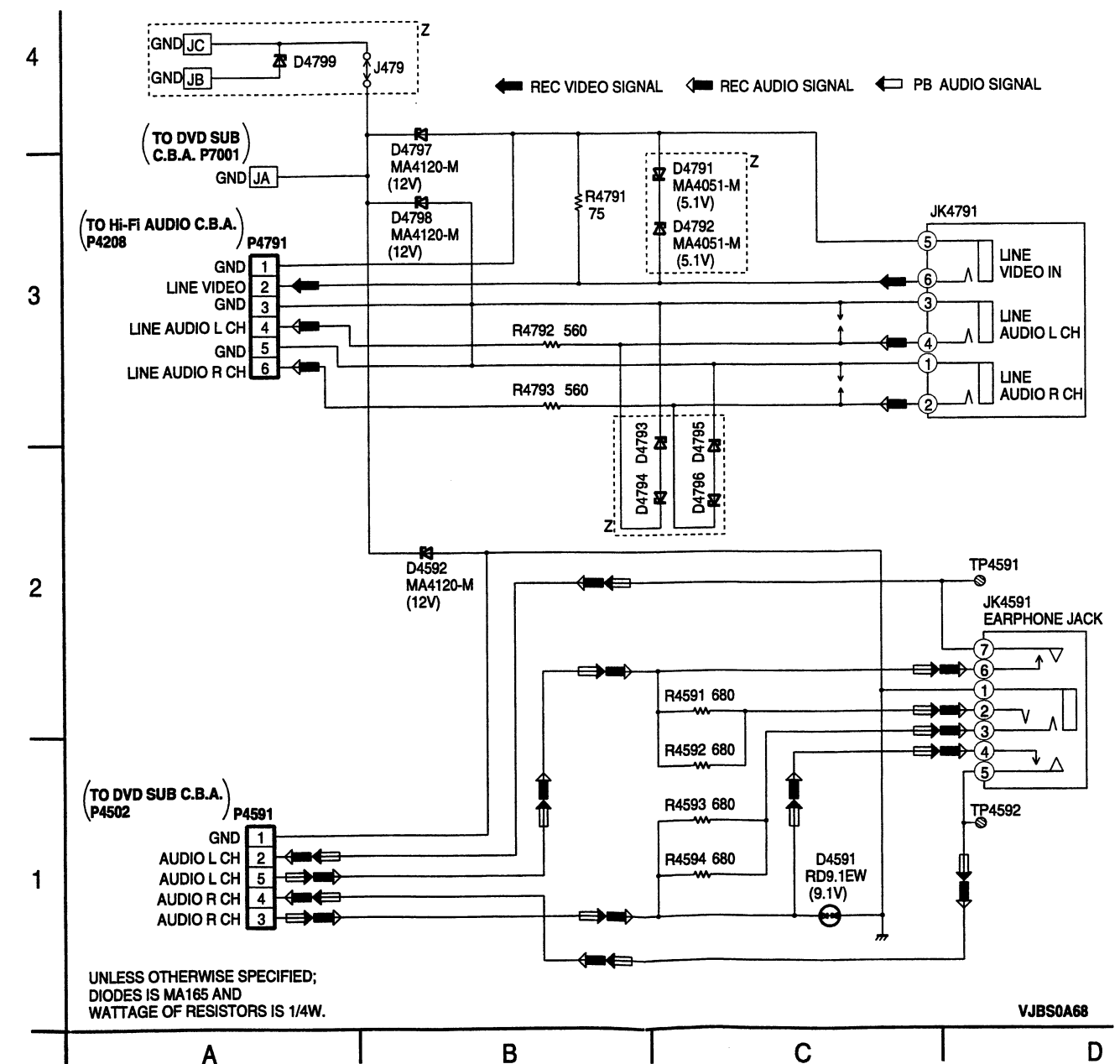
Circuit Board Layout Note

Circuit Board Layout shows components installed for various models.

For proper parts content for the model you are servicing, please refer to the schematic diagram and parts list.

AUDIO/VIDEO JACK SCHEMATIC DIAGRAM

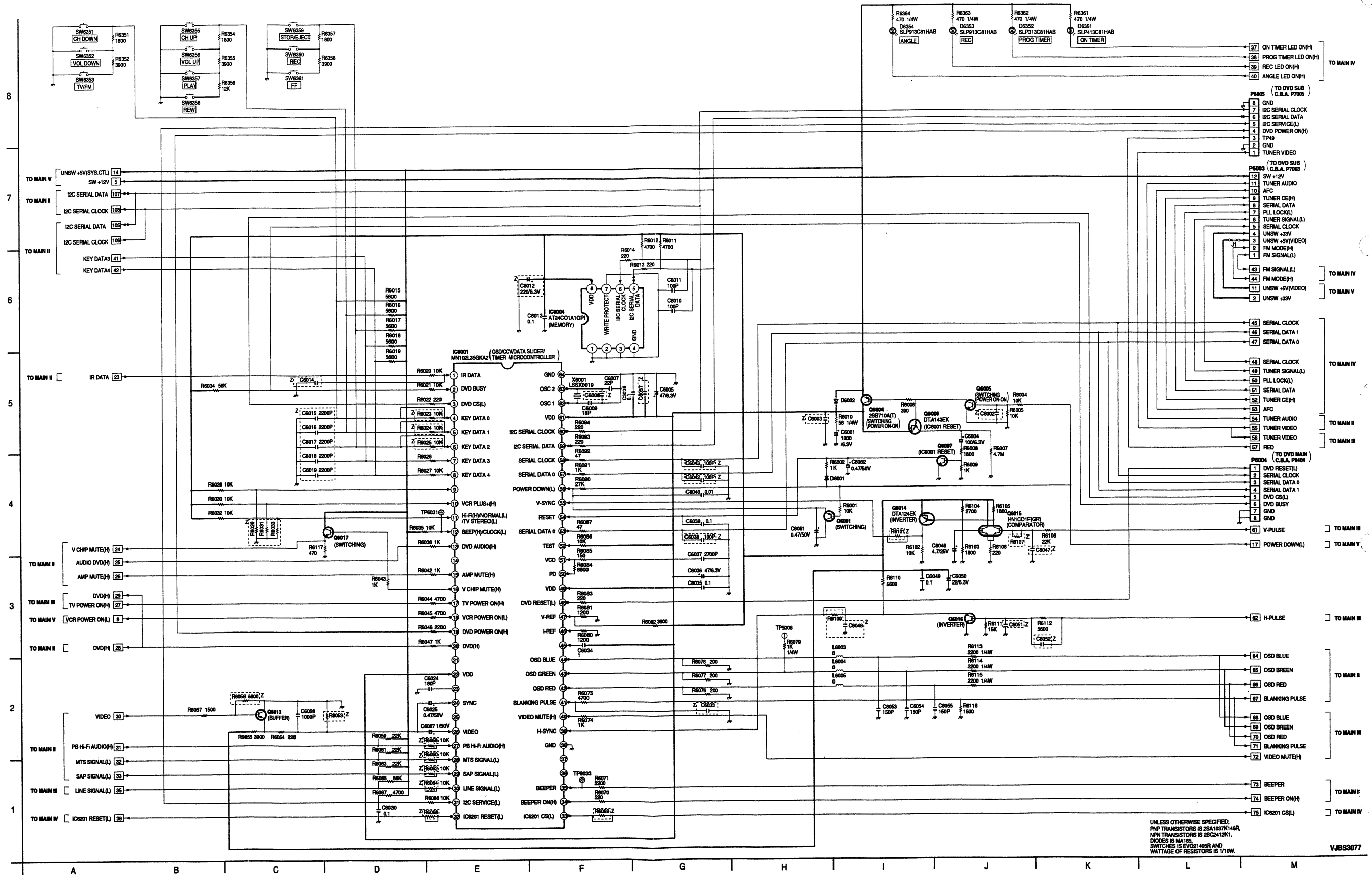
NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES, REFER TO BEGINNING OF SCHEMATIC SECTION.



MAIN I (TIMER/OSD/DATA SLICER) SCHEMATIC DIAGRAM

NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES,
REFER TO BEGINNING OF SCHEMATIC SECTION.

NOTE:
PARTS ENCLOSED IN DASHED LINES MARKED "Z" ARE NOT USED.

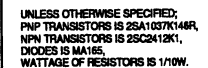


UNLESS OTHERWISE SPECIFIED;
PNP TRANSISTORS IS 2SA1037K146R
NPN TRANSISTORS IS 2SC2412K1,
DIODES IS MA165,
SWITCHES IS EVQ21405R AND
WATTAGE OF RESISTORS IS 1/10W.

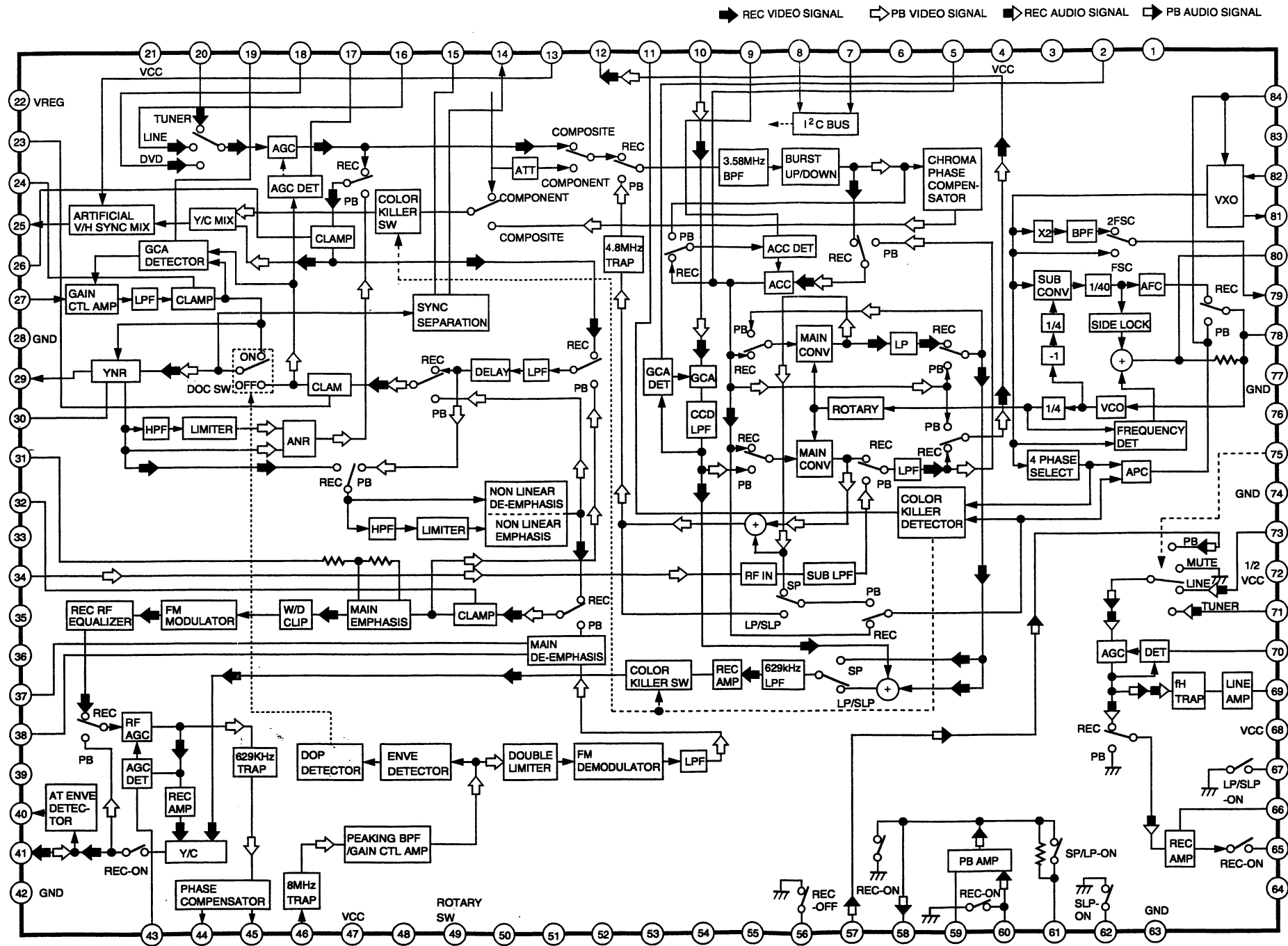
VJBS3077

9
8
7
6
5
4
3
2
1

NOTE:
PARTS ENCLOSED IN DASHED LINES MARKED "Z" ARE NOT USED.




IC3001 VIDEO / AUDIO PROCESS IC-DETAIL BLOCK DIAGRAM, AN3479FBP

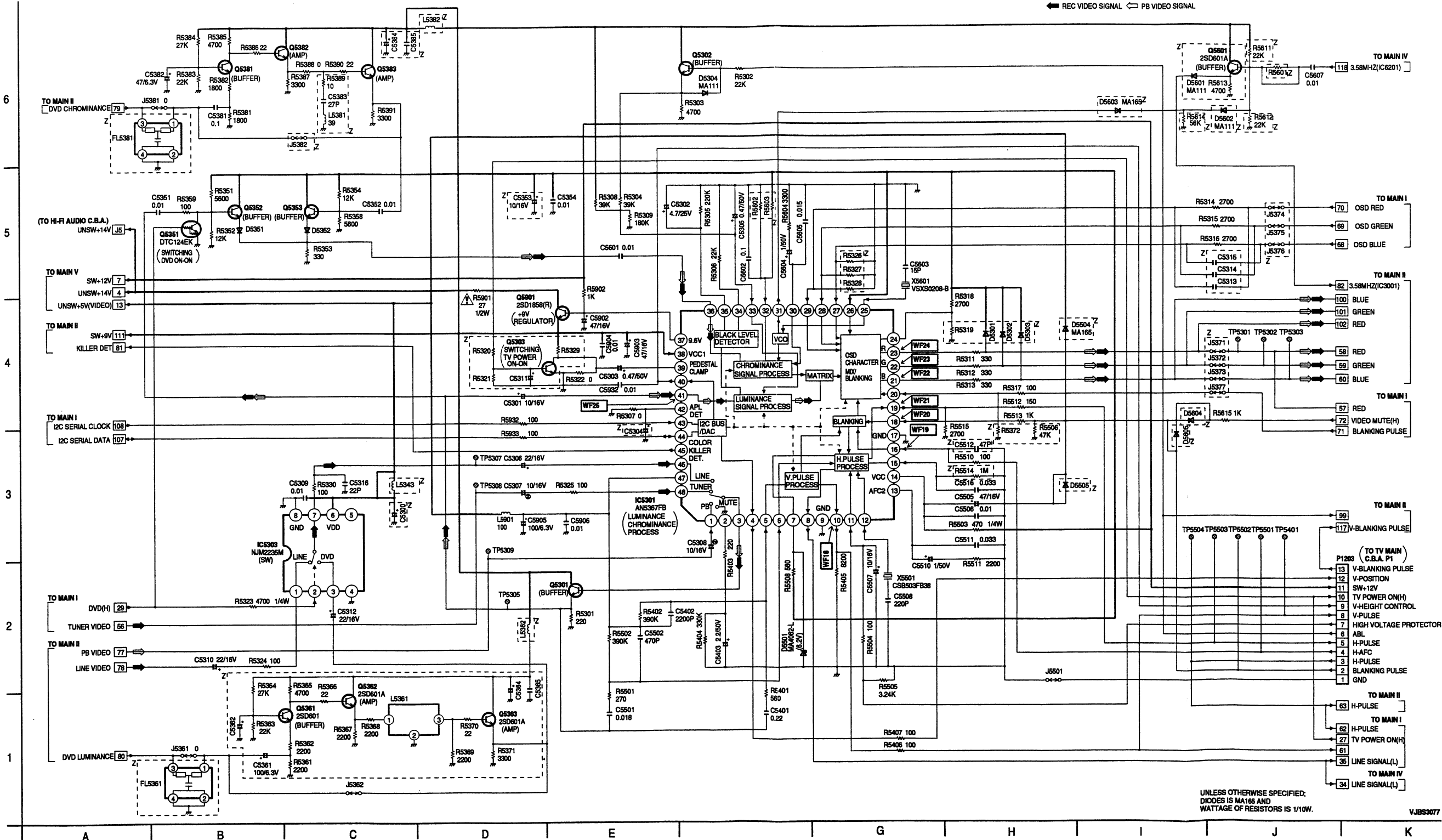


MAIN III (TV Y/C PROCESS) SCHEMATIC DIAGRAM

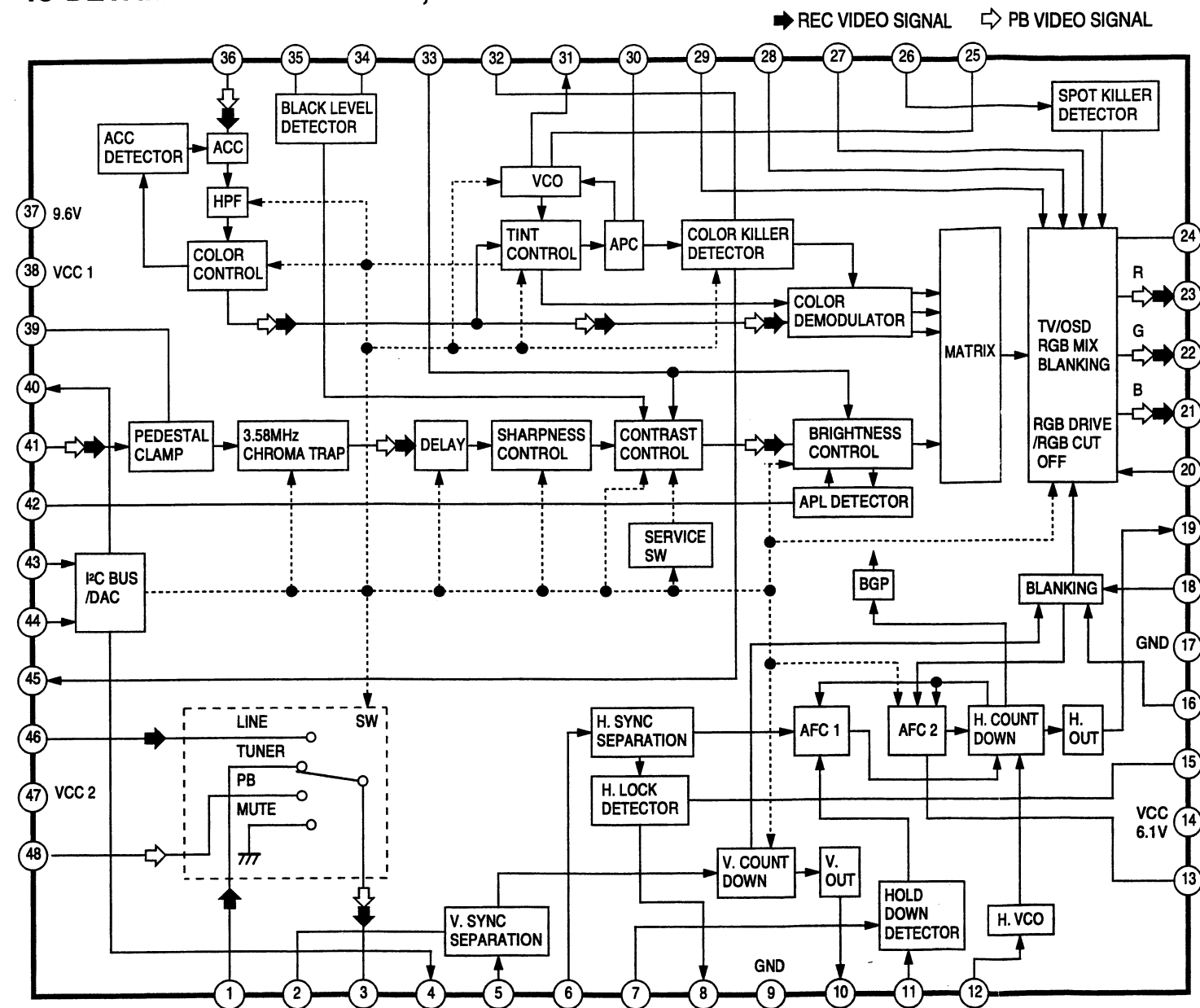
NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES,
REFER TO BEGINNING OF SCHEMATIC SECTION.

IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED BY THE SIGN  HAVE
SPECIAL CHARACTERISTICS IMPORTANT FOR SAFETY.
WHEN REPLACING ANY OF THESE COMPONENTS,
USE ONLY THE SPECIFIED PARTS.

NOTE:
PARTS ENCLOSED IN DASHED LINES MARKED "Z" ARE NOT USED.



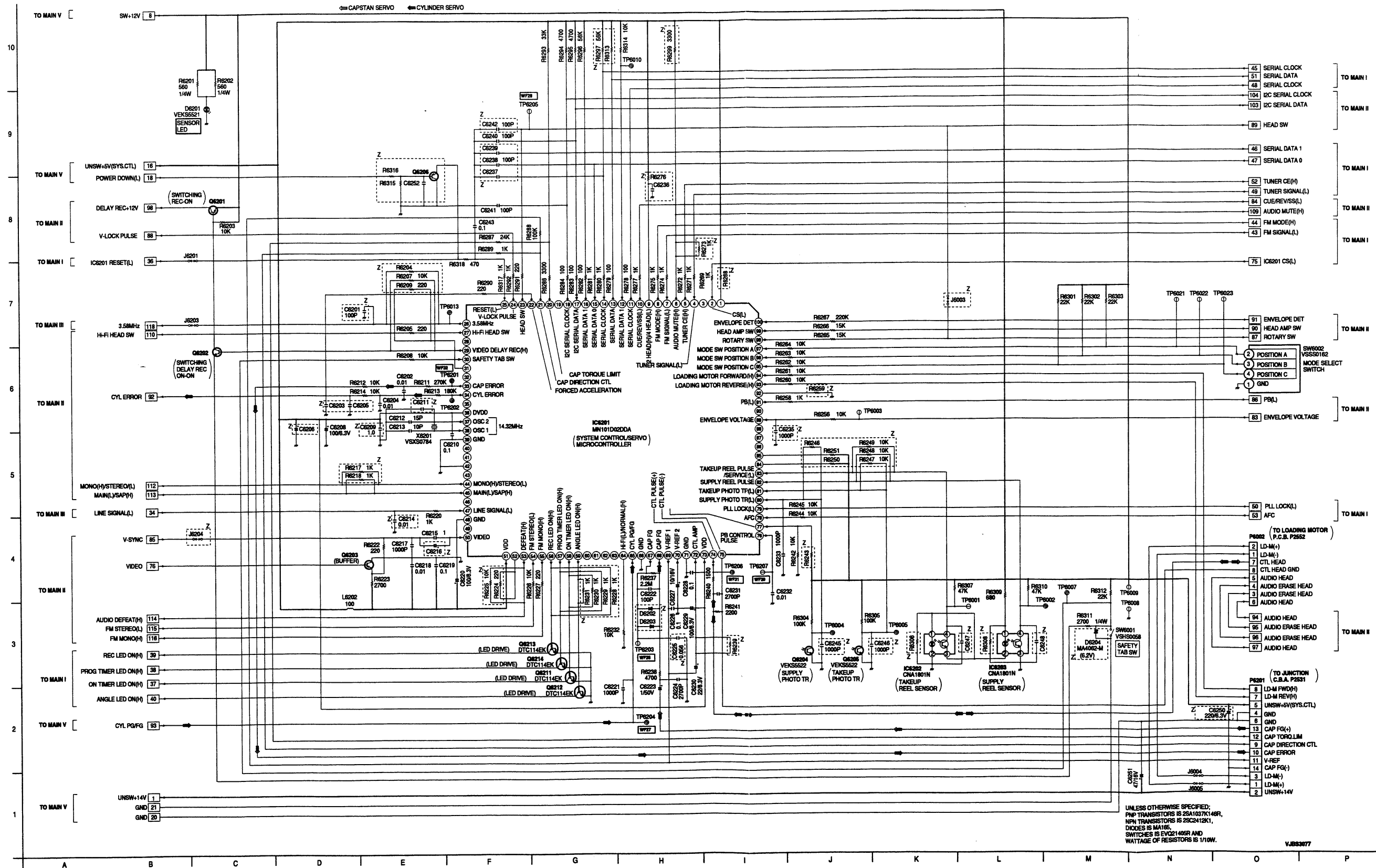
IC5301 LUMINANCE/CHROMINANCE PROCESS IC-DETAIL BLOCK DIAGRAM, AN5367FB



MAIN IV (SYSTEM CONTROL/SERVO) SCHEMATIC DIAGRAM

NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES,
REFER TO BEGINNING OF SCHEMATIC SECTION.

NOTE:
PARTS ENCLOSED IN DASHED LINES MARKED "Z" ARE NOT USED.



UNLESS OTHERWISE SPECIFIED;
PNP TRANSISTORS IS 2SA1037K146H
NPN TRANSISTORS IS 2SC2412K1,
DIODES IS MA165,
SWITCHES IS EVQ21406R AND
WATTAGE OF RESISTORS IS 1/10W.


VJBS3077

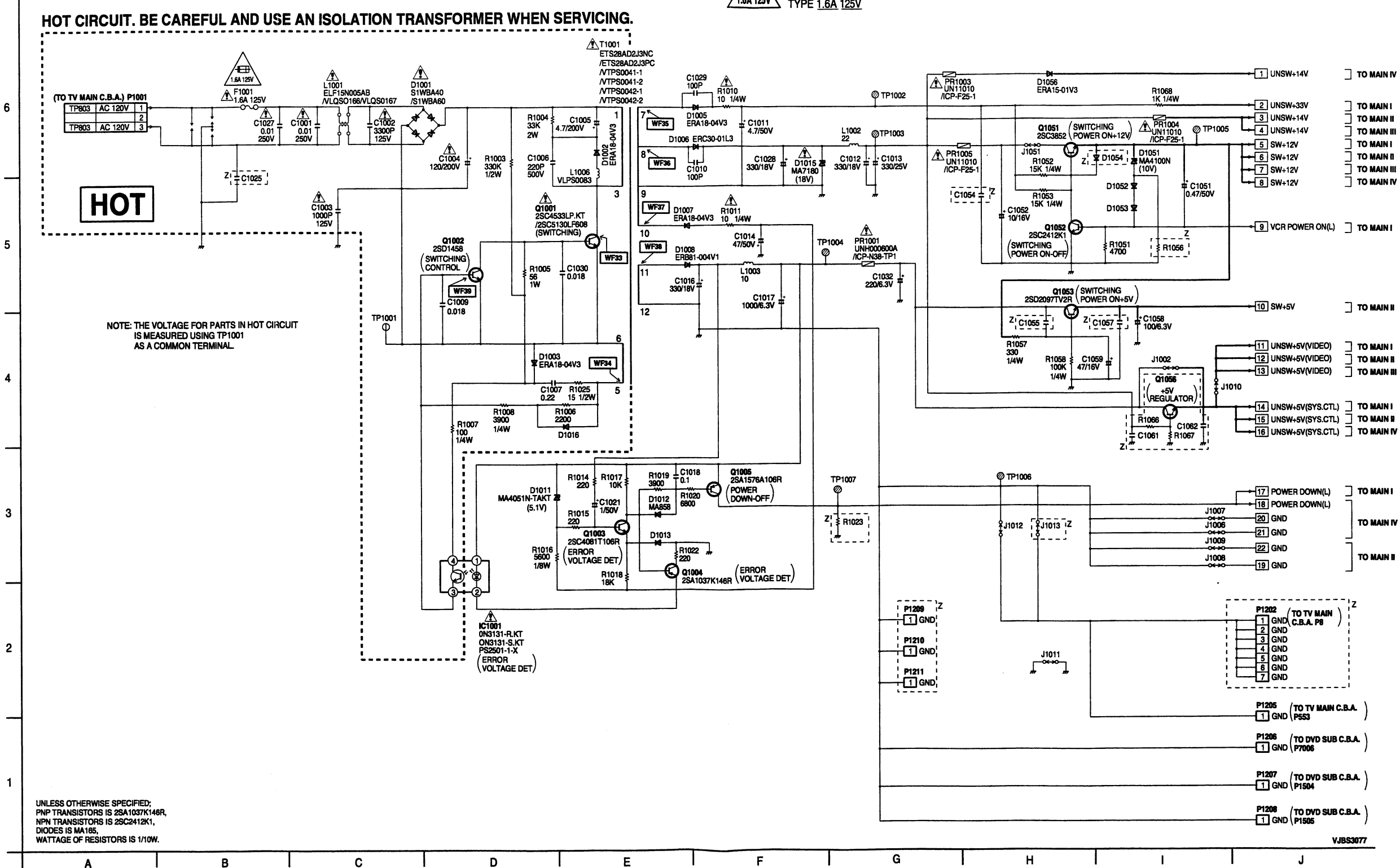
MAIN V (POWER SUPPLY) SCHEMATIC DIAGRAM

NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES,
REFER TO BEGINNING OF SCHEMATIC SECTION.

NOTE:
PARTS ENCLOSED IN DASHED LINES MARKED "Z" ARE NOT USED.

CAUTION: FOR CONTINUED PROTECTION AGAINST FIRE HAZARD,
REPLACE ONLY WITH THE SAME TYPE 1.6A 125V FUSE.
ATTENTION: POUR UNE PROTECTION CONTINUE LES RISQUES
D'T INCENDIE N'UTILISER QUE DES FUSIBLE DE MÊME
TYPE 1.6A 125V

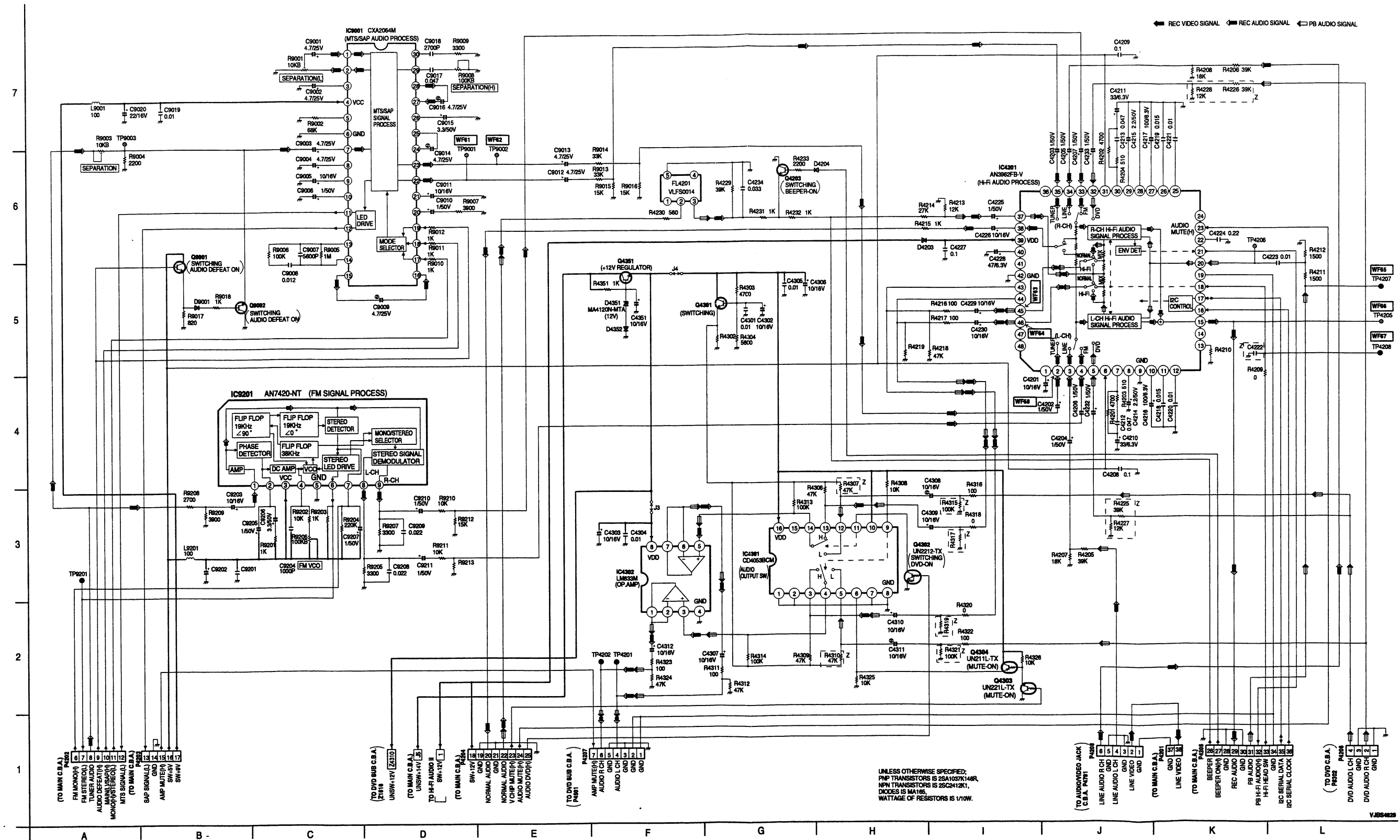
IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED BY THE SIGN  HAVE
SPECIAL CHARACTERISTICS IMPORTANT FOR SAFETY.
WHEN REPLACING ANY OF THESE COMPONENTS,
USE ONLY THE SPECIFIED PARTS.



Hi-Fi AUDIO | SCHEMATIC DIAGRAM

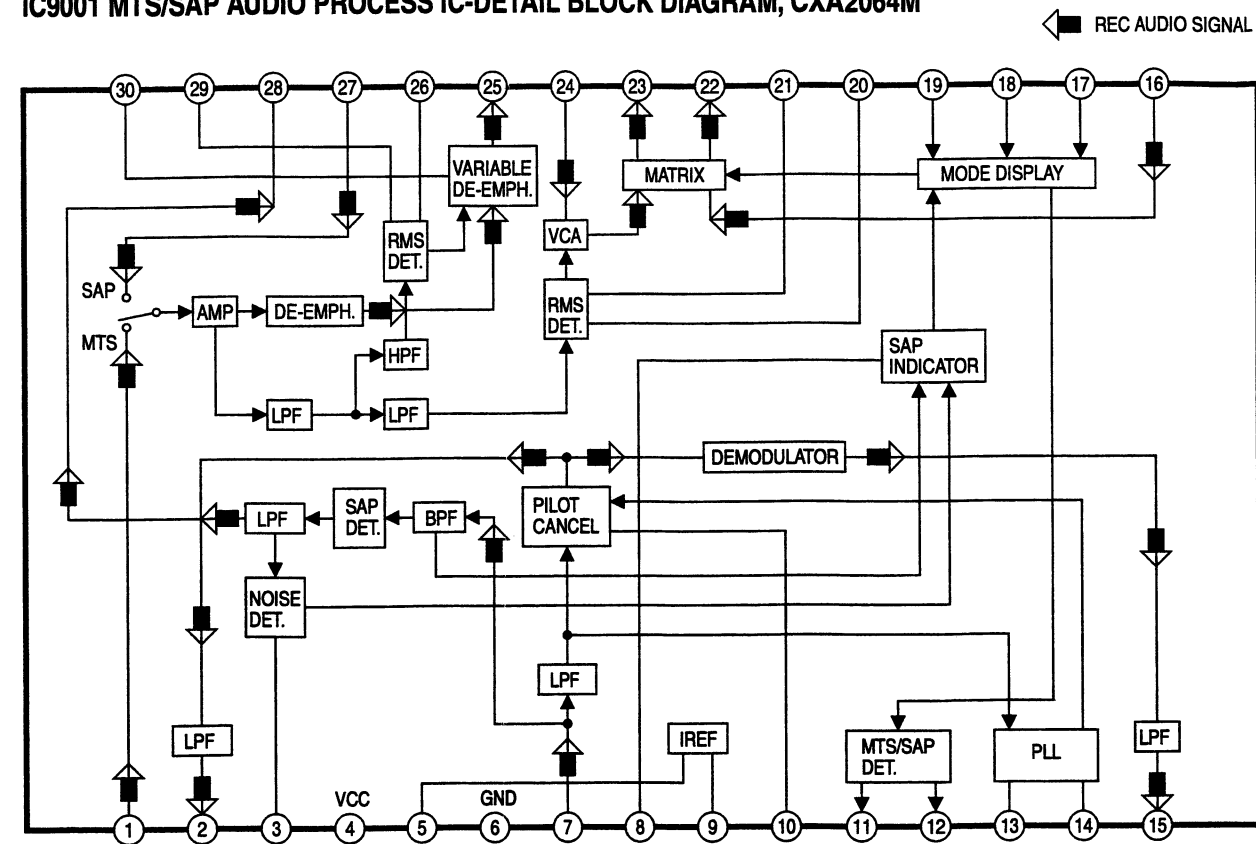
NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES,
REFER TO BEGINNING OF SCHEMATIC SECTION.

NOTE:
PARTS ENCLOSED IN DASHED LINES MARKED "Z" ARE NOT USED.

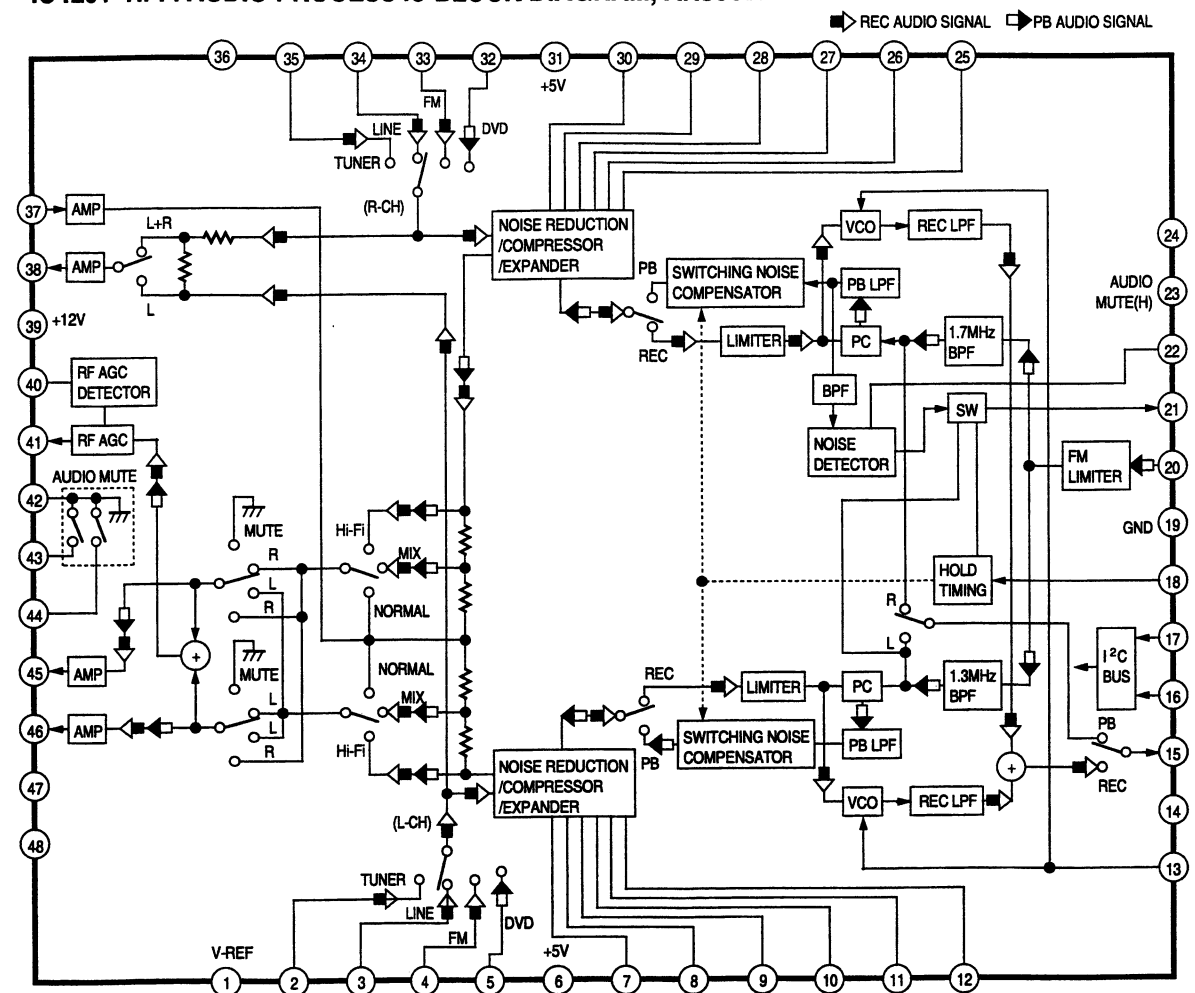


NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES,
REFER TO BEGINNING OF SCHEMATIC SECTION.

IC9001 MTS/SAP AUDIO PROCESS IC-DETAIL BLOCK DIAGRAM, CXA2064M



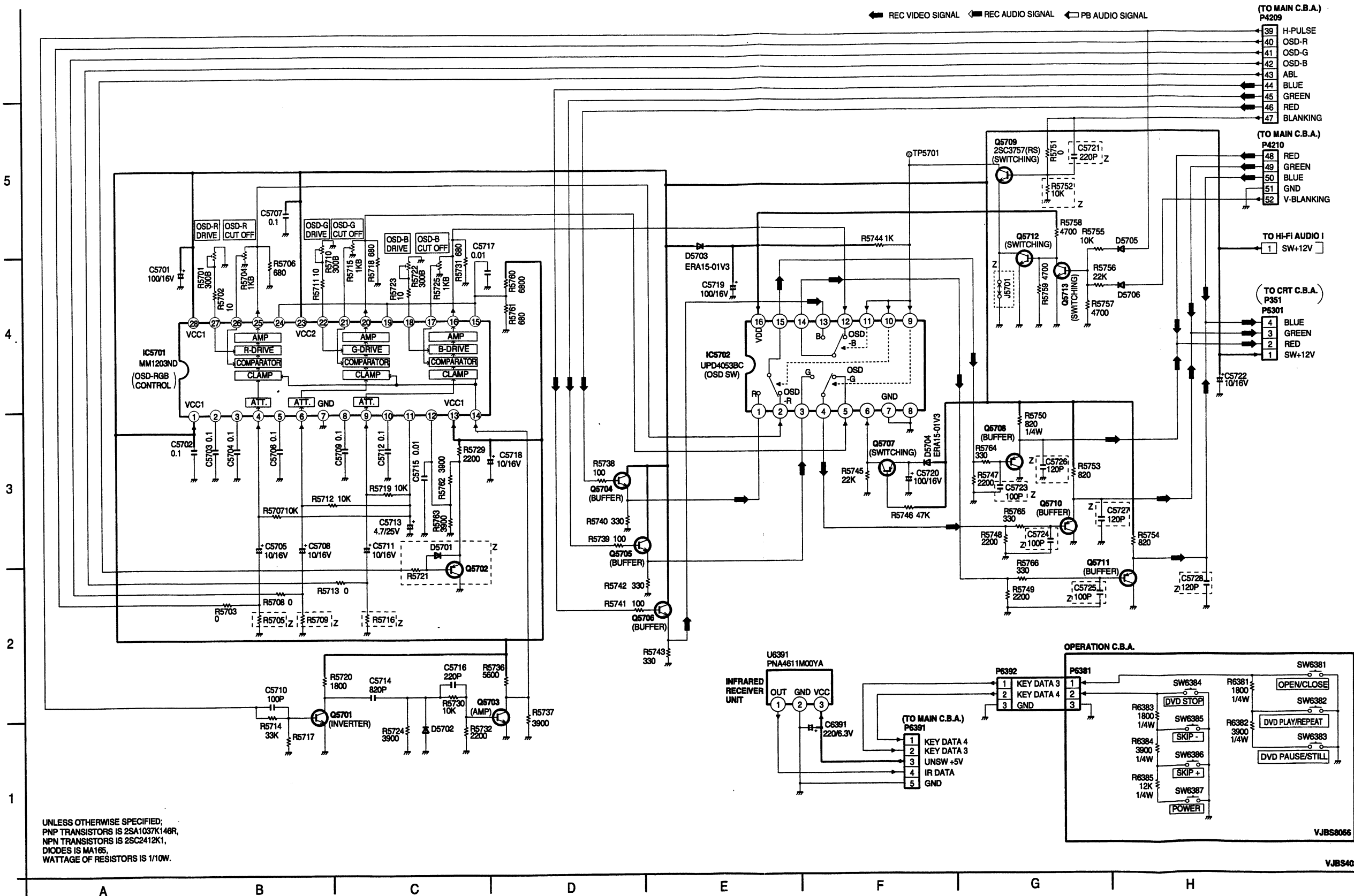
IC4201 Hi-Fi AUDIO PROCESS IC-BLOCK DIAGRAM, AN3962FB-V



Hi-Fi AUDIO II / OPERATION SCHEMATIC DIAGRAM

NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES,
REFER TO BEGINNING OF SCHEMATIC SECTION.

NOTE:
PARTS ENCLOSED IN DASHED LINES MARKED "Z" ARE NOT USED.



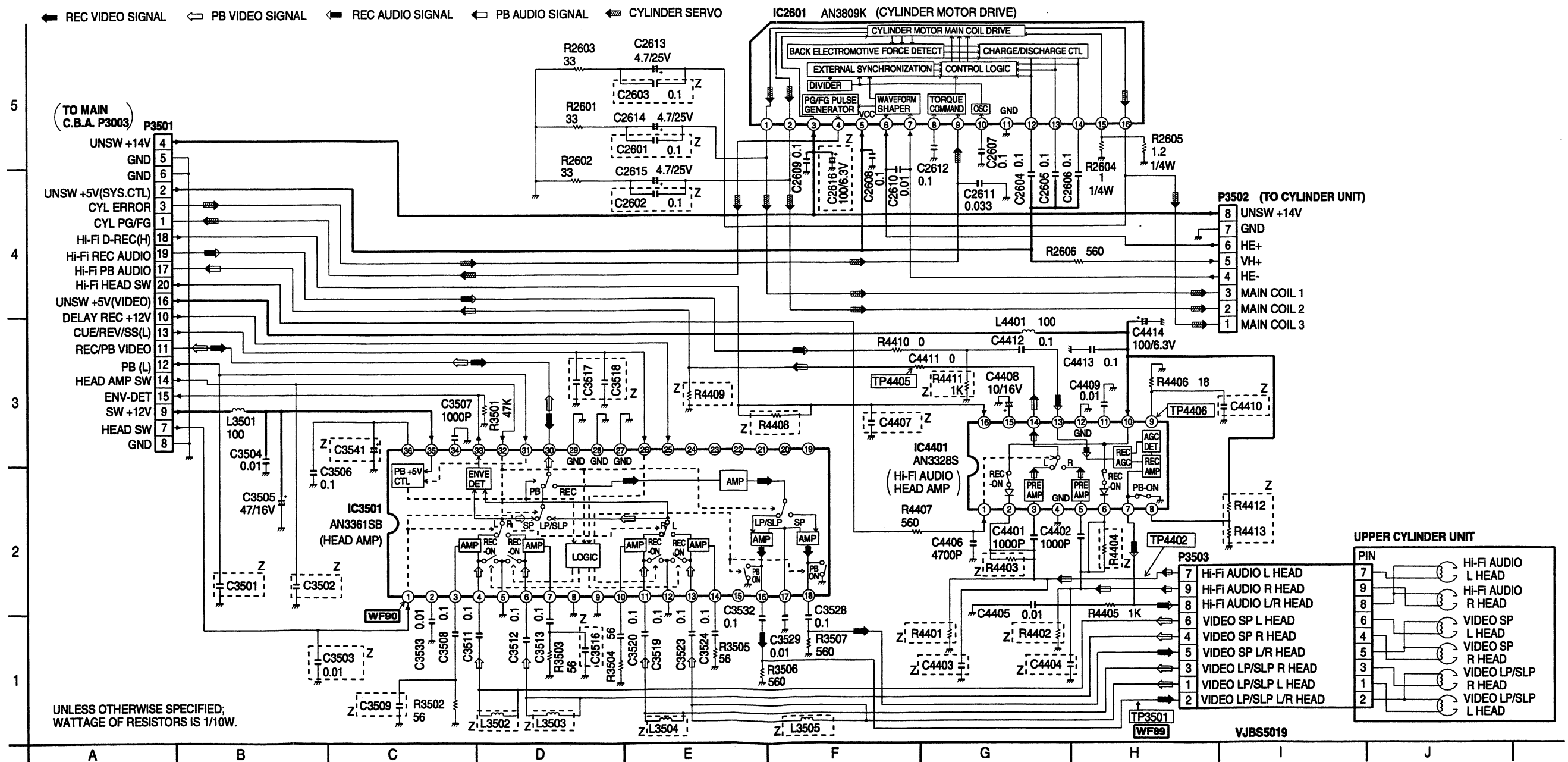
UNLESS OTHERWISE SPECIFIED:
PNP TRANSISTORS IS 2SA1037K146R,
NPN TRANSISTORS IS 2SC2412K1,
DIODES IS MA165,
WATTAGE OF RESISTORS IS 1/10W.

VJBS4029

Hi-Fi AUDIO/VIDEO HEAD AMP SCHEMATIC DIAGRAM

NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES,
REFER TO BEGINNING OF SCHEMATIC SECTION.

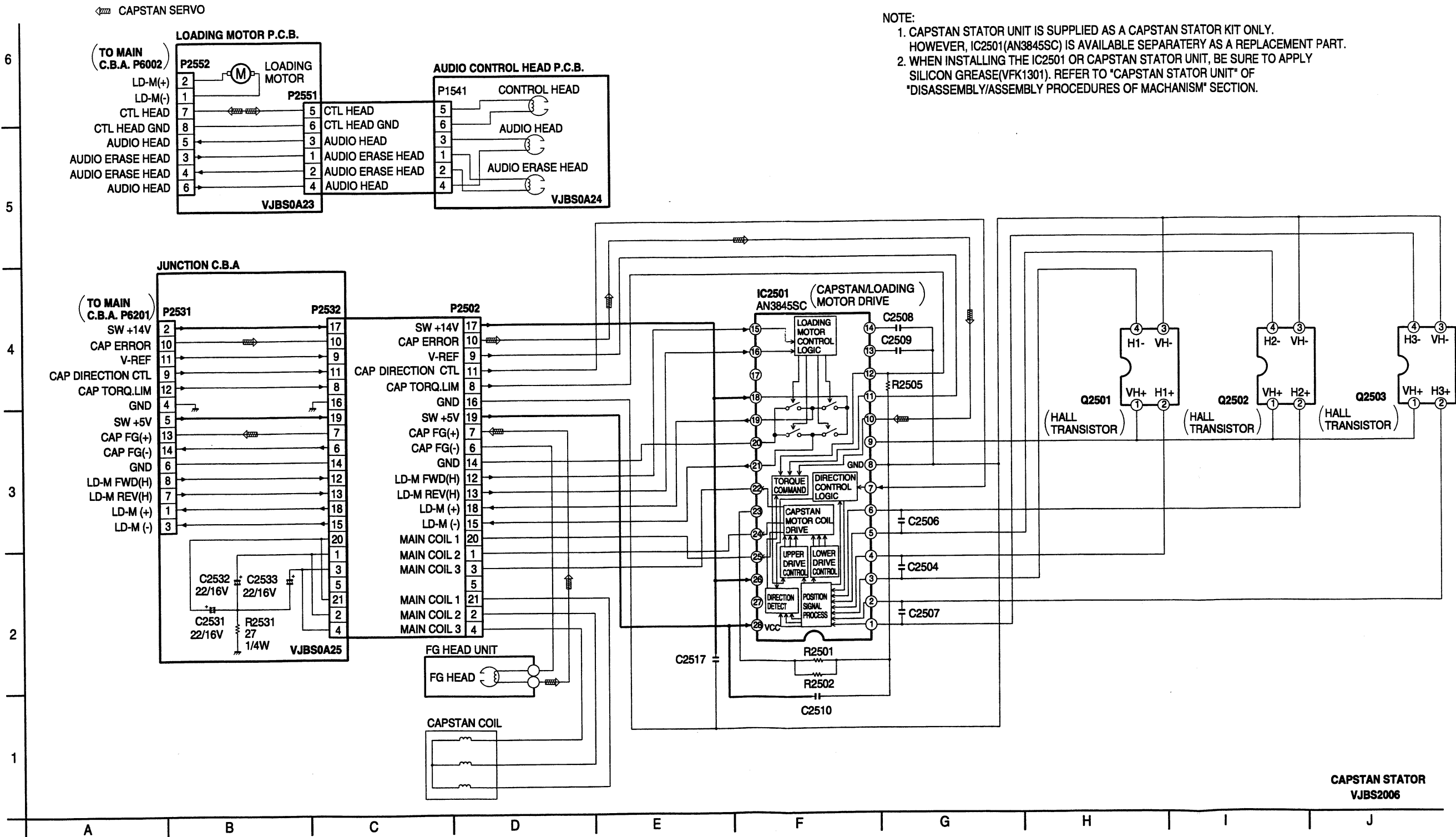
NOTE:
PARTS ENCLOSED IN DASHED LINES MARKED "Z" ARE NOT USED.



CAPSTAN STATOR / JUNCTION / LOADING MOTOR / AUDIO CONTROL HEAD SCHEMATIC DIAGRAM

NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES,
REFER TO BEGINNING OF SCHEMATIC SECTION.

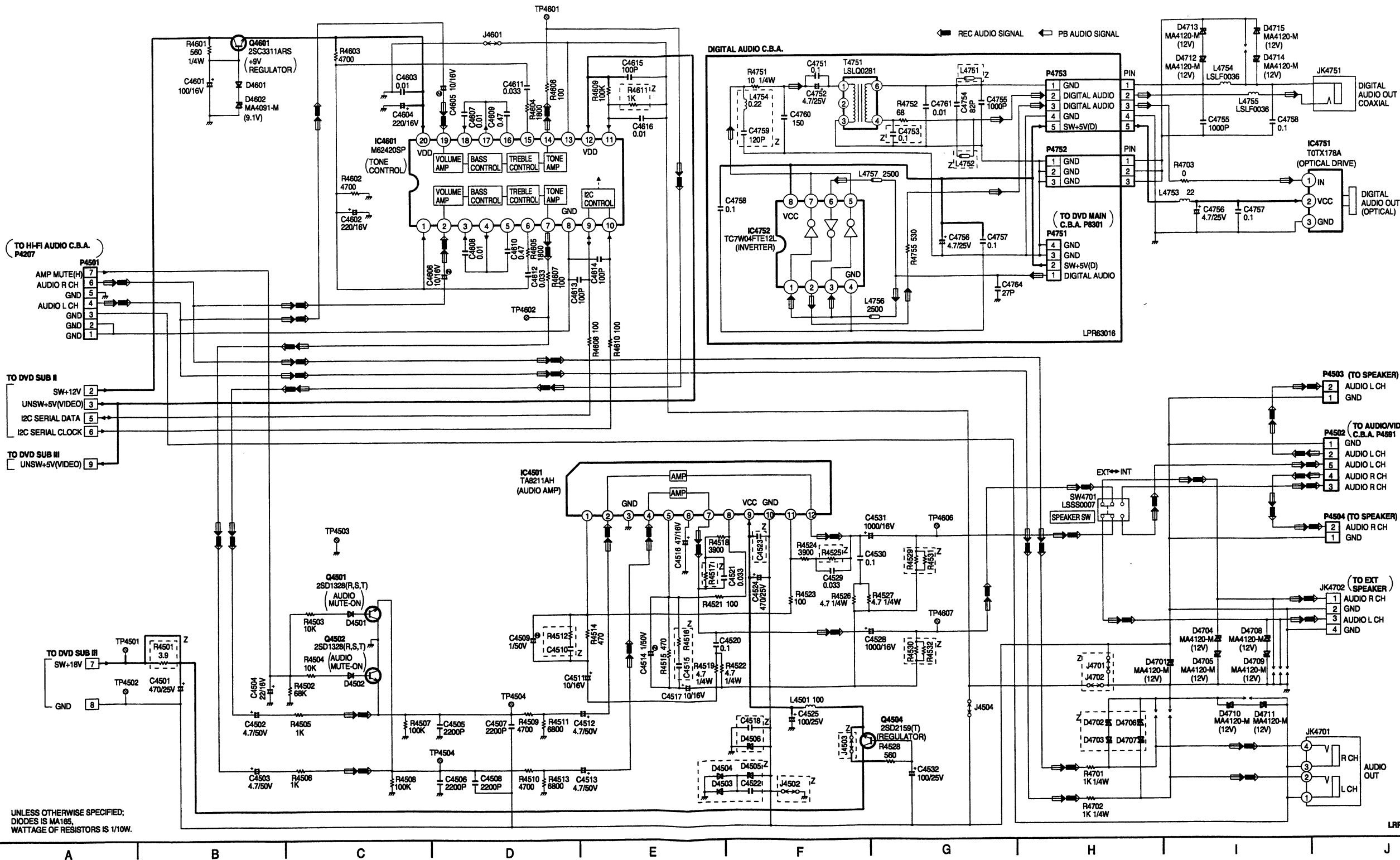
NOTE:
1. CAPSTAN STATOR UNIT IS SUPPLIED AS A CAPSTAN STATOR KIT ONLY.
HOWEVER, IC2501(AN3845SC) IS AVAILABLE SEPARATELY AS A REPLACEMENT PART.
2. WHEN INSTALLING THE IC2501 OR CAPSTAN STATOR UNIT, BE SURE TO APPLY
SILICON GREASE(VFK1301). REFER TO 'CAPSTAN STATOR UNIT' OF
'DISASSEMBLY/ASSEMBLY PROCEDURES OF MACHANISM' SECTION.



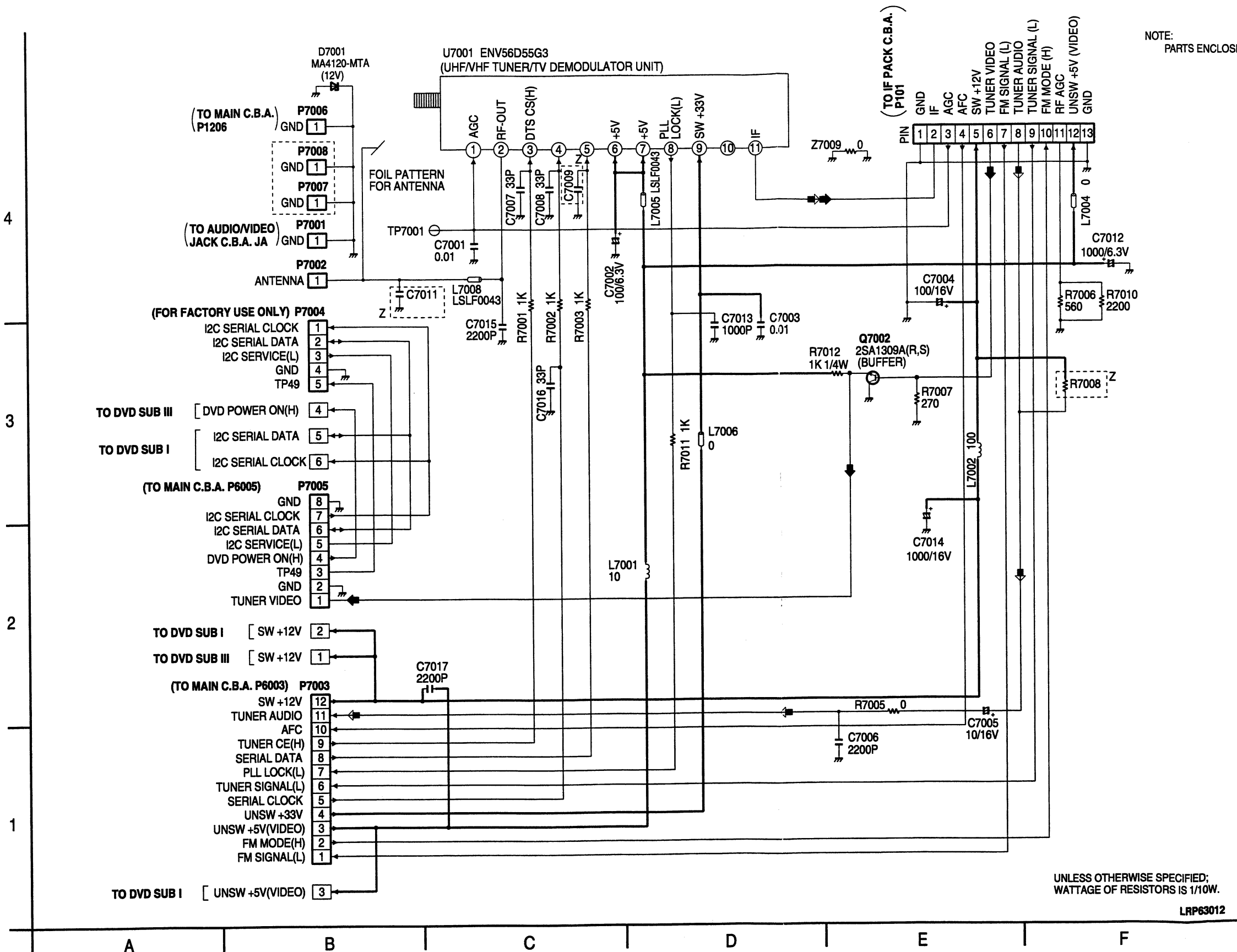
DVD SUB I / DIGITAL AUDIO SCHEMATIC DIAGRAM

NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES,
REFER TO BEGINNING OF SCHEMATIC SECTION.

NOTE:
PARTS ENCLOSED IN DASHED LINES MARKED "Z" ARE NOT USED.



DVD SUB II SCHEMATIC DIAGRAM



NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES,
REFER TO BEGINNING OF SCHEMATIC SECTION.

NOTE:
PARTS ENCLOSED IN DASHED LINES MARKED 'Z' ARE NOT USED.

UNLESS OTHERWISE SPECIFIED;
WATTAGE OF RESISTORS IS 1/10W.


LRP63012

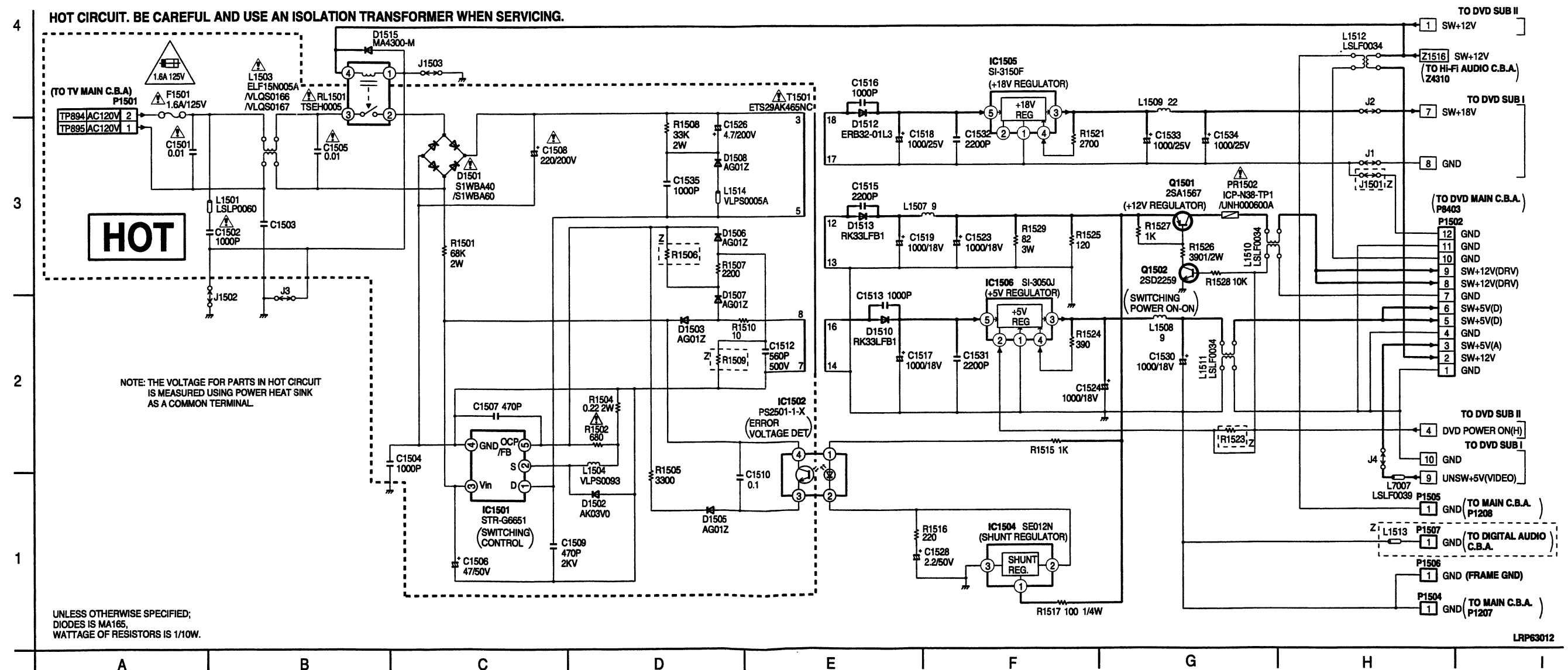
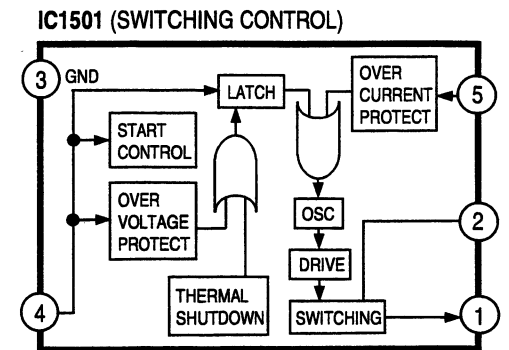
DVD SUB III SCHEMATIC DIAGRAM

NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES,
REFER TO BEGINNING OF SCHEMATIC SECTION.

**CAUTION: FOR CONTINUED PROTECTION AGAINST FIRE HAZARD,
REPLACE ONLY WITH THE SAME TYPE 1.6A 125V FUSE.
ATTENTION: POUR UNE PROTECTION CONTINUE LES RISQUES
D'INCENDIE N'UTILISER QUE DES FUSIBLES DE MÊME
TYPE 1.6A 125V**

NOTE:
PARTS ENCLOSED IN DASHED LINES MARKED "Z" ARE NOT USED.


IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED BY THE SIGN  HAVE SPECIAL CHARACTERISTICS IMPORTANT FOR SAFETY. WHEN REPLACING ANY OF THESE COMPONENTS, USE ONLY THE SPECIFIED PARTS.



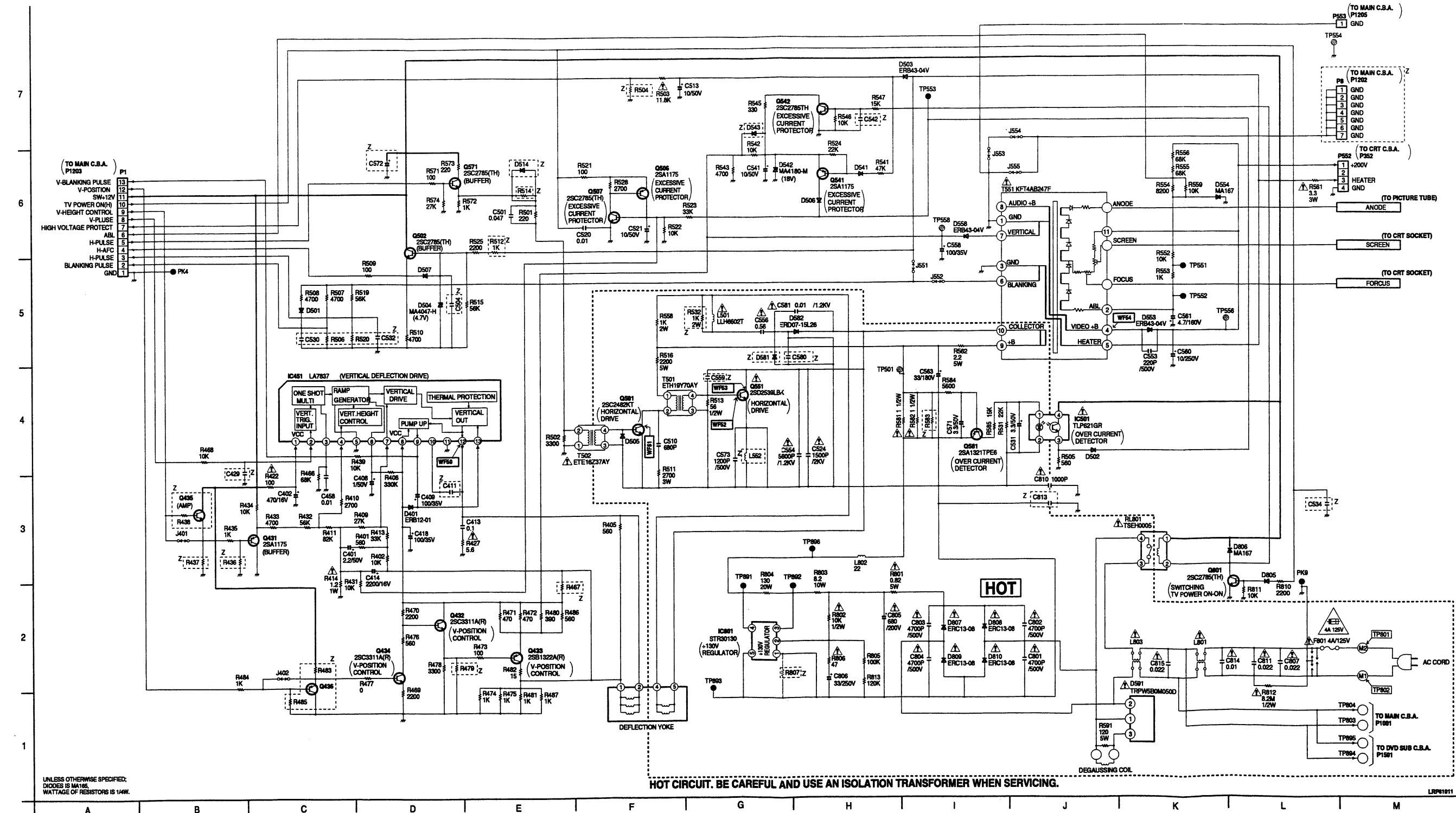
TV MAIN SCHEMATIC DIAGRAM

NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES,
REFER TO BEGINNING OF SCHEMATIC SECTION.

NOTE:
PARTS ENCLOSED IN DASHED LINES MARKED "Z" ARE NOT USED.

IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED BY THE SIGN  HAVE
SPECIAL CHARACTERISTICS IMPORTANT FOR SAFETY.
WHEN REPLACING ANY OF THESE COMPONENTS,
USE ONLY THE SPECIFIED PARTS.


**CAUTION: FOR CONTINUED PROTECTION AGAINST FIRE HAZARD,
REPLACE ONLY WITH THE SAME TYPE 4A 125V FUSE.
ATTENTION: POUR UNE PROTECTION CONTINUE LES RISQUES
D'INCENDIE N'UTILISER QUE DES FUSIBLE DE MÊME
TYPE 4A 125V**

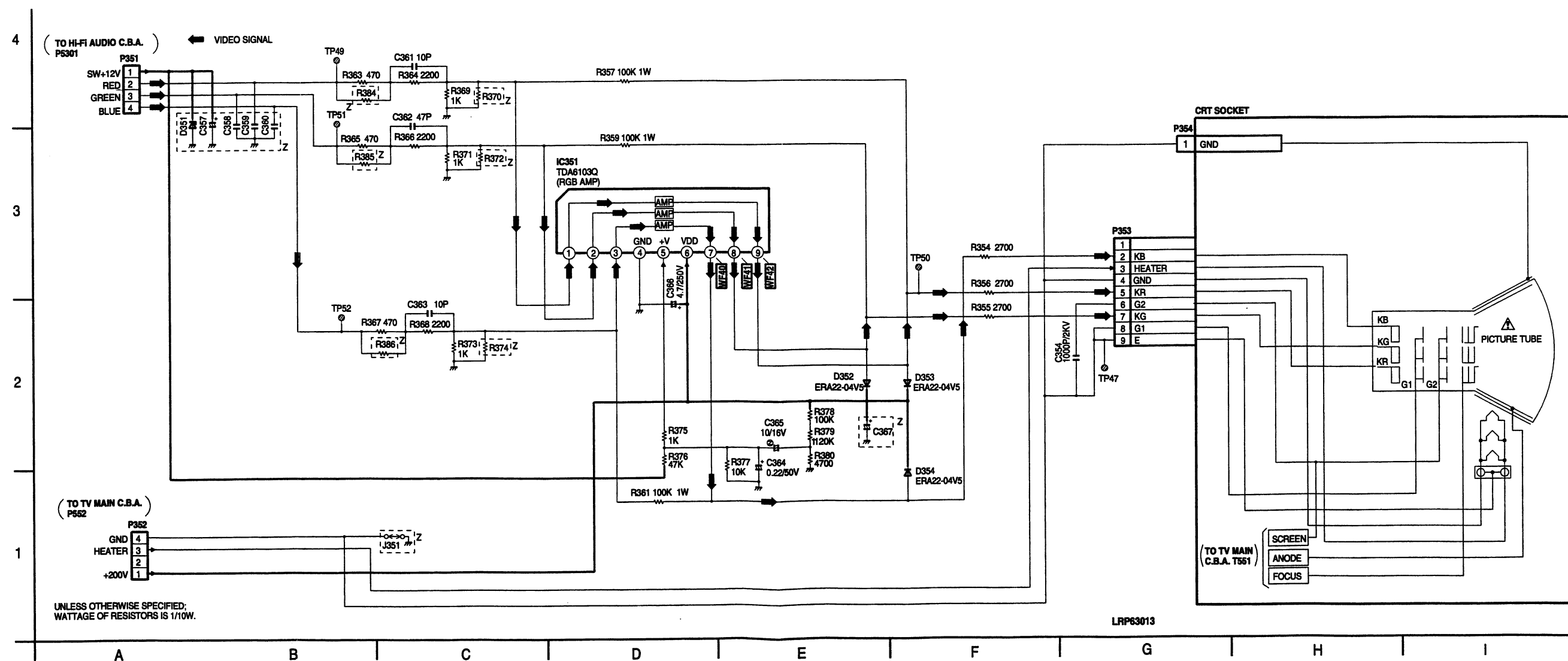


CRT SCHEMATIC DIAGRAM


NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES,
REFER TO BEGINNING OF SCHEMATIC SECTION.

NOTE:
PARTS ENCLOSED IN DASHED LINES MARKED "Z" ARE NOT USED.

IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED BY THE SIGN  HAVE SPECIAL CHARACTERISTICS IMPORTANT FOR SAFETY. WHEN REPLACING ANY OF THESE COMPONENTS, USE ONLY THE SPECIFIED PARTS.



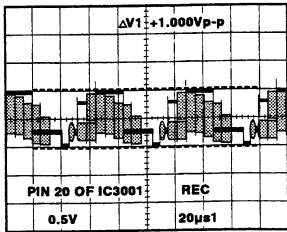
[illegible]

IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED BY THE SIGN  HAVE SPECIAL CHARACTERISTICS IMPORTANT FOR SAFETY. WHEN REPLACING ANY OF THESE COMPONENTS, USE ONLY THE SPECIFIED PARTS.

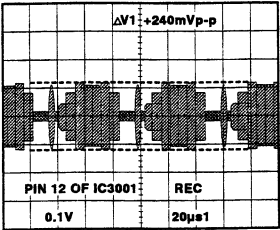
SIGNAL WAVEFORM

NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES,
REFER TO BEGINNING OF SCHEMATIC SECTION.

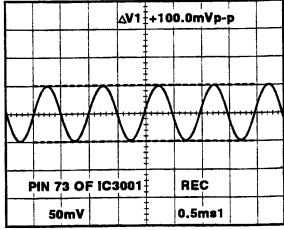
MAIN C.B.A.



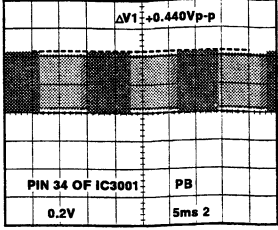
WF1



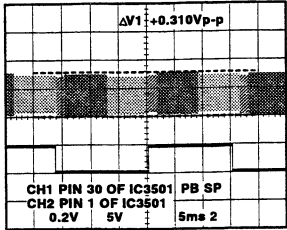
WF6



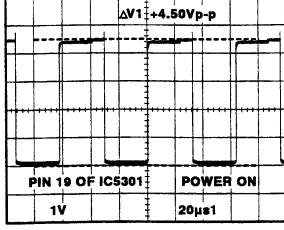
WF9



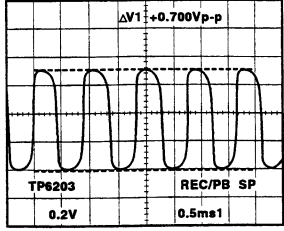
WF14



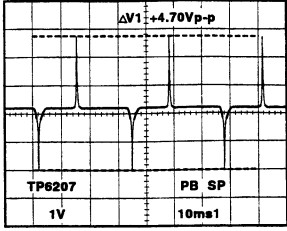
CH1 WF17
CH2 WF34



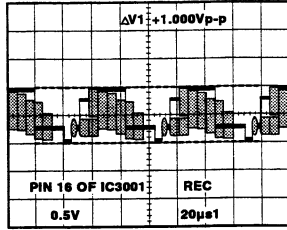
WF21



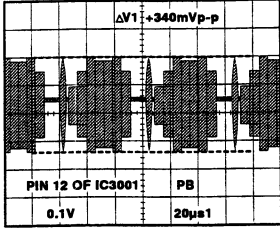
WF26



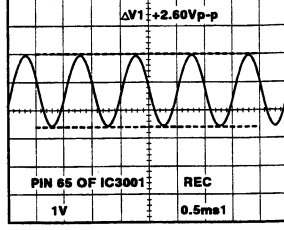
WF29



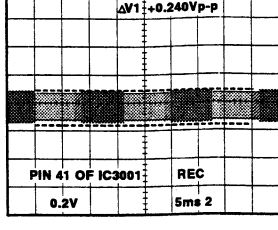
WF2



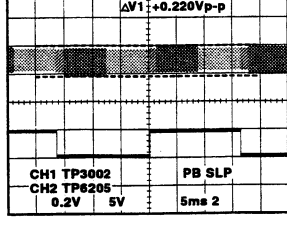
WF6



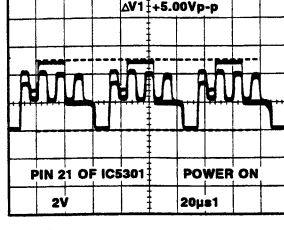
WF10



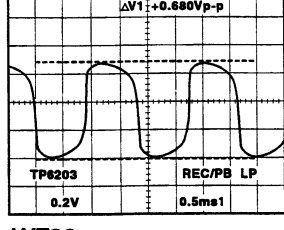
WF15



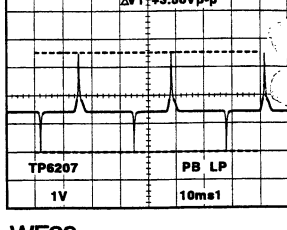
CH1 WF17
CH2 WF34



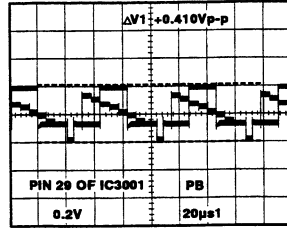
WF22



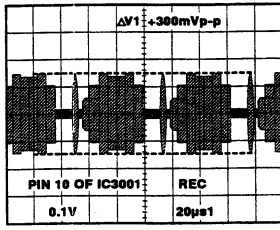
WF26



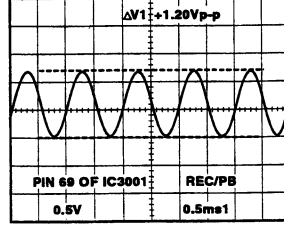
WF29



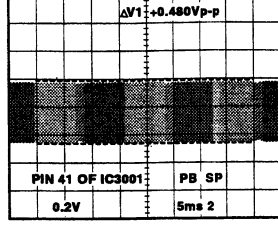
WF3



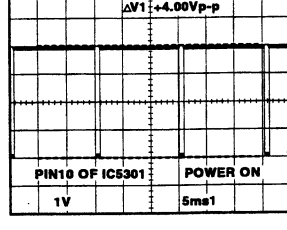
WF7



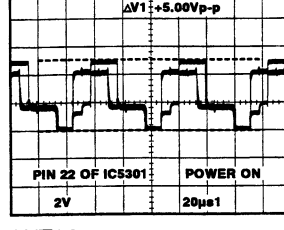
WF11



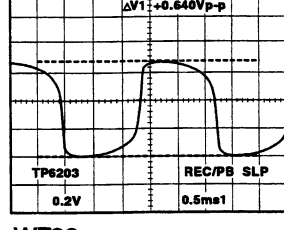
WF15



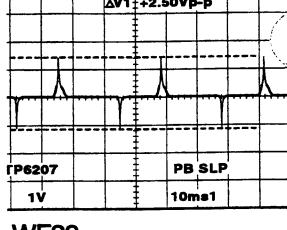
WF18



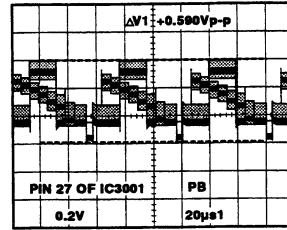
WF23



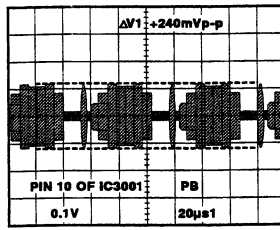
WF26



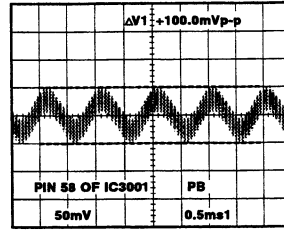
WF29



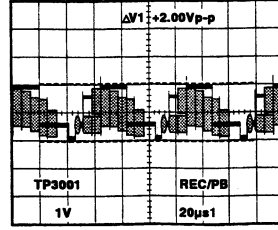
WF4



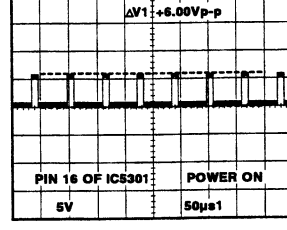
WF7



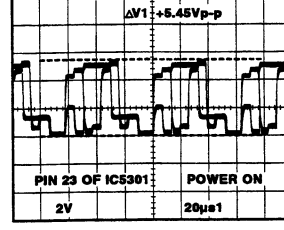
WF12



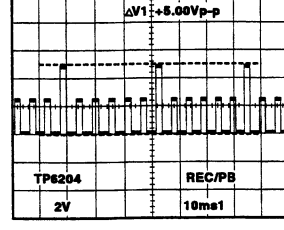
WF16



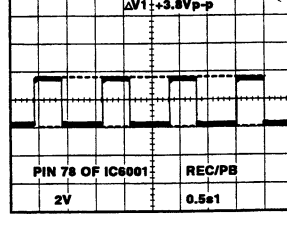
WF19



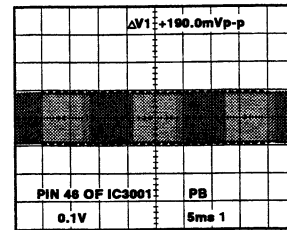
WF24



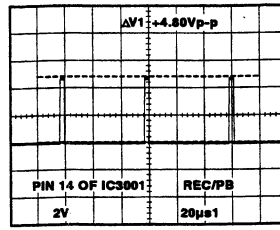
WF27



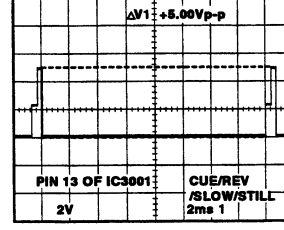
WF30



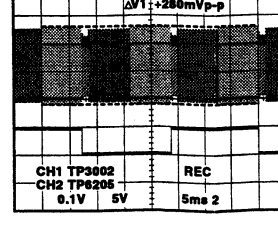
WF5



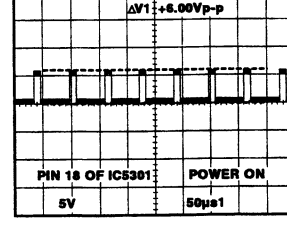
WF8



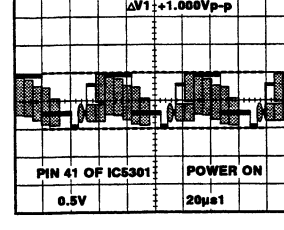
WF13



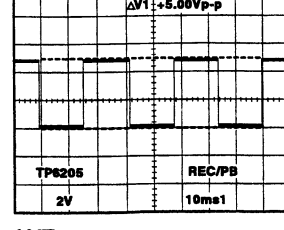
CH1 WF17
CH2 WF34



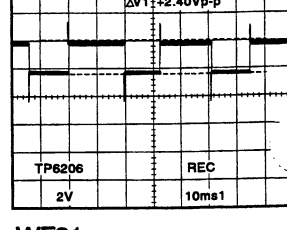
WF20



WF25



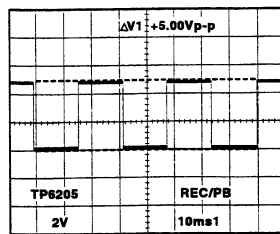
WF28



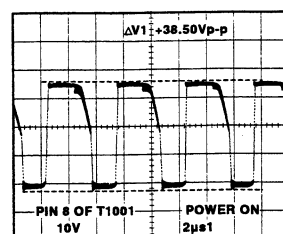
WF31

NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES,
REFER TO BEGINNING OF SCHEMATIC SECTION.

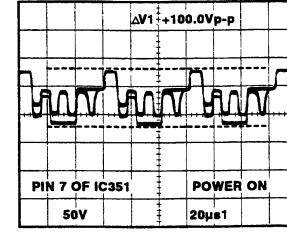
Hi-Fi AUDIO/VIDEO HEAD AMP C.B.A.



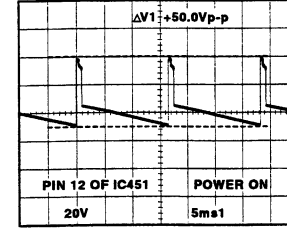
WF32



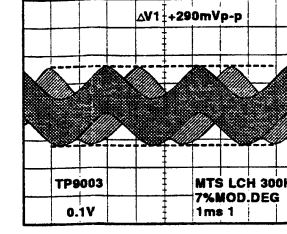
WF36



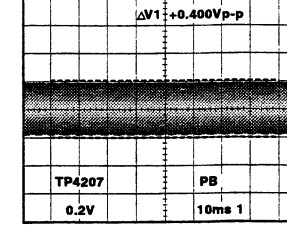
WF40



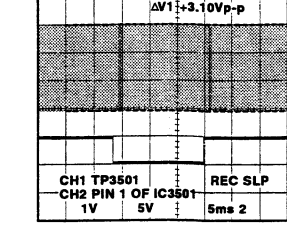
WF50



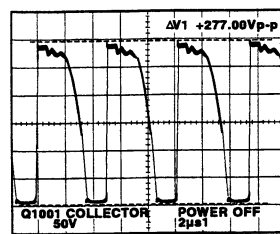
WF60



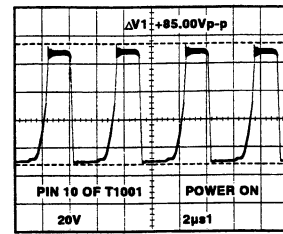
WF65



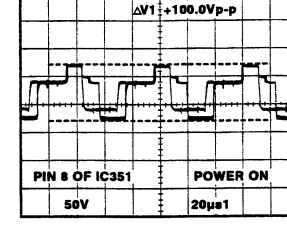
CH1 WF70
CH2 WF71



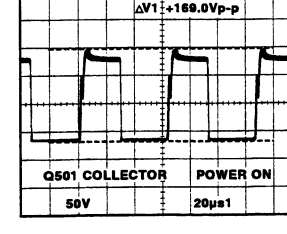
WF33



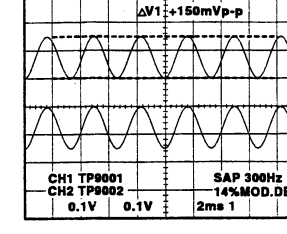
WF37



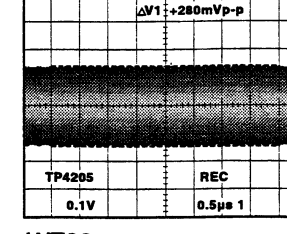
WF41



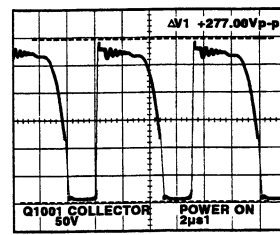
WF51



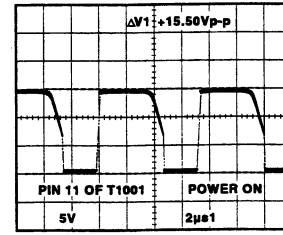
CH1 WF61
CH2 WF62



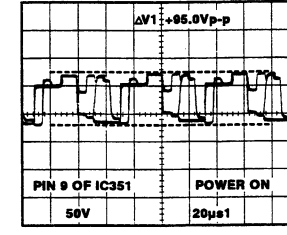
WF66



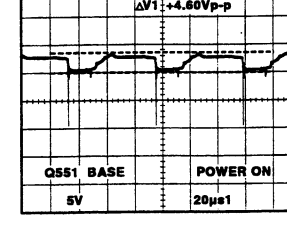
WF33



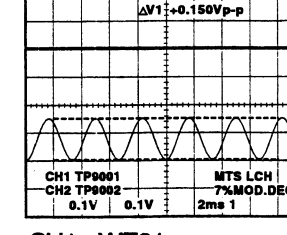
WF38



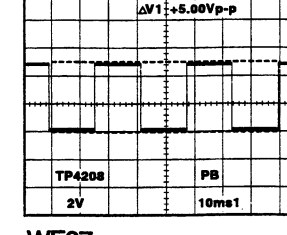
WF42



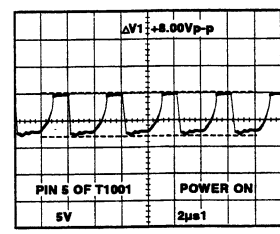
WF52



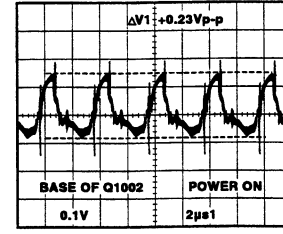
CH1 WF61
CH2 WF62



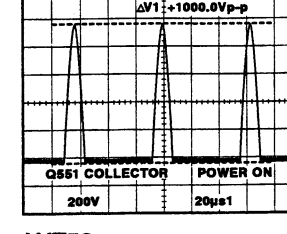
WF67



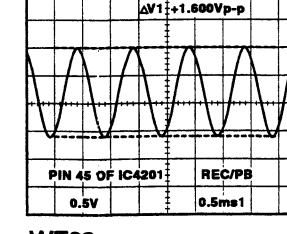
WF34



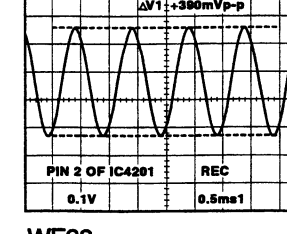
WF39



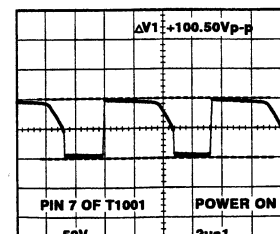
WF53



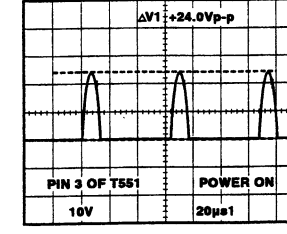
WF63



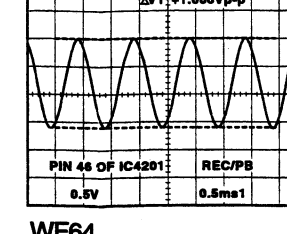
WF68



WF35



WF54



WF64

VOLTAGE CHART

MAIN CIRCUIT

NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES,
REFER TO BEGINNING OF SCHEMATIC SECTION.

MODE PIN NO.	REC	PLAY
IC1001		
1	5.1	5.1
2	4.4	4.4
3	2.2	2.2
4	0.6	0.6
IC3001		
1	5.1	5.1
2	3.4	3.4
3	2.1	2.1
4	5.1	5.1
5	4.3	4.3
6	—	—
7	5.2	5.2
8	5.2	5.2
9	2.2	2.2
10	2.8	2.8
11	0.8	0.8
12	2.8	2.8
13	0.4	0.4
14	0.5	0.5
15	0	0.9
16	3.1	3.8
17	2.4	1.8
18	3.1	5.7
19	2.6	2.6
20	3.1	4.0
21	5.1	5.1
22	0	2.0
23	2.6	2.4
24	2.6	2.4
25	2.0	2.0
26	2.6	2.5
27	2.0	2.0
28	0	0
29	1.9	1.8
30	1.9	1.6
31	2.0	1.2
32	2.4	2.4
33	2.7	2.7
34	3.0	2.8
35	2.6	2.6
36	2.5	2.5
37	0	1.5
38	4.4	2.3
39	0	1.5
40	3.4	2.9
41	0	-0
42	0	0
43	3.4	3.3
44	2.6	2.6
45	2.6	2.6
46	2.6	2.6
47	5.0	5.0
48	1.3	1.3

MODE PIN NO.	REC	PLAY
49	2.7	2.7
50	2.8	3.1
51	5.0	5.0
52	2.5	2.5
53	2.5	2.5
54	4.1	0.1
55	0	0
56	0.1	4.4
57	0	2.6
58	2.6	2.6
59	2.6	2.6
60	2.6	2.6
61	2.6	2.6
62	0	0
63	0	0
64	1.8	1.8
65	2.6	2.6
66	0	2.6
67	2.6	0
68	5.2	0
69	2.6	2.6
70	0.3	0
71	2.6	2.6
72	2.6	0
73	2.6	2.6
74	0	0
75	0	0
76	3.3	0
77	0	0
78	2.1	0
79	3.0	0
80	0	2.0
81	—	—
82	—	—
83	2.6	0
84	2.5	0
IC3201		
1	3.4	3.4
2	-2.5	-2.5
3	0	0
4	2.5	2.5
5	2.5	2.5
6	-2.7	-2.7
7	2.1	2.1
8	3.0	3.0
IC3301		
1	2.5	2.5
2	0.1	0.1
3	3.9	3.9
4	0	0
5	3.9	3.9
6	5.1	5.1
7	1.8	1.8
8	0	0

MODE PIN NO.	REC	PLAY
IC5301		
1	2.7	2.7
2	2.5	2.5
3	3.4	3.4
4	3.1	3.1
5	2.1	2.1
6	2.1	2.1
7	6.2	6.2
8	0	0
9	0	0
10	3.8	3.8
11	4.9	4.9
12	2.8	2.8
13	4.2	4.2
14	6.4	6.4
15	4.3	4.3
16	0.6	0.6
17	0	0
18	0.6	0.6
19	2.2	2.2
20	0	0
21	3.7	3.7
22	3.7	3.7
23	3.7	3.7
24	6.0	6.0
25	2.7	2.7
26	9.2	9.2
27	0	0
28	0	0
29	0	0
30	5.8	5.8
31	3.3	3.3
32	3.7	3.7
33	6.3	6.3
34	0	8.3
35	0	4.9
36	4.3	4.3
37	9.7	9.7
38	0	0
39	2.3	2.3
40	2.1	2.1
41	2.0	2.0
42	0	0
43	4.9	4.9
44	4.9	4.9
45	0.4	0.4
46	2.5	2.5
47	5.1	5.1
48	2.7	2.7
IC5303		
1	2.5	2.5
2	0.1	0.1
3	3.9	3.9
4	0	0

MODE PIN NO.	REC	PLAY
5	---	---
6	5.2	5.2
7	1.8	1.8
8	0	0
IC6001		
1	4.9	4.9
2	4.7	4.5
3	5.1	5.1
4	5.2	5.2
5	5.2	5.2
6	5.2	5.2
7	5.2	5.2
8	5.2	5.2
9	5.2	5.2
10	5.2	5.2
11	5.2	5.2
12	5.1	5.1
13	0	0
14	5.1	5.1
15	5.0	5.0
16	0	0
17	5.0	5.0
18	0.1	0.1
19	0.1	0.1
20	0.1	0.1
21	0.1	0.1
22	5.1	5.1
23	0.2	0.3
24	2.1	2.5
25	1.1	1.0
26	2.0	2.0
27	4.4	0.3
28	5.0	5.0
29	2.4	2.4
30	0.3	4.6
31	5.1	5.1
32	5.3	5.3
33	1.4	1.4
34	0.1	0.1
35	3.4	2.2
36	5.2	5.1
37	0.1	0.1
38	0	0
39	4.3	4.3
40	0.1	0.1
41	0.1	0.1
42	0	0
43	0	0
44	0	0
45	3.8	3.8
46	1.3	1.3
47	1.3	1.3
48	0.1	0.1
49	5.1	5.1

MODE PIN NO.	REC	PLAY
50	1.3	1.3
51	1.4	1.4
52	5.1	5.1
53	5.1	5.1
54	5.1	5.1
55	5.1	5.1
56	5.3	5.3
57	5.2	5.2
58	5.1	5.1
59	5.1	5.1
60	5.1	5.1
61	5.1	5.1
62	2.7	2.7
63	2.9	2.9
64	0	0
IC6004		
1	0	0
2	0	0
3	0	0
4	0	0
5	5.1	5.1
6	5.1	5.1
7	0	0
8	5.3	5.3
IC6201		
1	3.1	3.1
2	1.4	1.4
3	0	0
4	3.3	3.3
5	0.6	0.6
6	5.1	0
7	4.9	4.9
8	0	0
9	0	0
10	5.3	5.3
11	4.8	4.8
12	5.2	5.2
13	5.2	5.2
14	5.0	5.0
15	5.0	5.0
16	5.0	5.0
17	5.3	5.3
18	5.3	5.3
19	5.3	5.3
20	0	0
21	2.6	0
22	2.7	2.5
23	5.3	2.7
24	0	0
25	5.3	5.3
26	2.7	2.7
27	0	0
28	0	0
29	5.3	0

MODE PIN NO.	REC	PLAY
30	0.1	0.1
31	5.3	0
32	0	0
33	2.7	2.4
34	4.2	2.5
35	0	0
36	5.3	5.3
37	2.7	1.7
38	2.7	2.7
39	0	0
40	0	0
41	0	0
42	0	0
43	0	0
44	0	0
45	0	0
46	0	0
47	4.8	0.3
48	0	0
49	0	0
50	2.3	3.0
51	5.3	5.3
52	0	0
53	0	0
54	0	0.1
55	4.5	4.5
56	0	0
57	5.2	0
58	0	0
59	0	0
60	0	0
61	0	0
62	0	0
63	0	0
64	0	0
65	5.3	1.2
66	0	0
67	2.7	2.7
68	2.7	2.7
69	2.7	2.7
70	2.6	2.6
71	0	0
72	2.6	0.1
73	5.3	5.3
74	0	2.6
75	2.6	2.6
76	2.6	0.1
77	0	0
78	2.6	2.6
79	0.4	0.1
80	4.7	4.8
81	4.5	0
82	4.9	5.0
83	1.3	1.3

MODE PIN NO.	REC	PLAY
84	0	0
85	0	0
86	0	0
87	0	0
88	0	0
89	0	0
90	0	0
91	0	5.3
92	0	0
93	0	0
94	0.3	0
95	4.9	0
96	0.1	5.1
97	1.3	0.1
98	0.1	0.1
99	0.1	0.1
100	1.3	0.1
IC6202		
1	1.3	1.3
2	0	0
3	1.3	1.3
4	4.9	4.9
IC6203		
1	2.4	2.4
2	1.2	1.2
3	0	0
4	5.0	5.0
Q1001		
E	0	0
C	127.4	127.4
B	0.3	0.3
Q1002		
E	0	0
C	0.3	0.3
B	0.6	0.6
Q1003		
E	0.6	0.6
C	4.2	4.2
B	0	0
Q1004		
E	4.5	4.5
C	0.1	0.1
B	4.2	4.2
Q1005		
E	5.3	5.3
C	0.1	0.1
B	5.3	5.3
Q1051		
E	11.9	11.9
C	14.8	14.8
B	12.5	12.5
Q1052		
E	0	0

MODE PIN NO.	REC	PLAY
C	12.5	12.5
B	0.7	0.7
Q1053		
E	5.3	5.3
C	5.3	5.3
B	6.0	6.0
Q3001		
E	1.7	1.7
C	0.1	0.1
B	1.0	1.0
Q3002		
E	2.9	2.9
C	3.5	3.5
B	4.7	4.7
Q4001		
E	5.2	5.2
C	19.2	19.2
B	5.2	5.2
Q4002		
E	12.3	12.3
C	19.3	19.3
B	0	0
Q4003		
E	12.6	12.6
C	0	0
B	19.2	19.2
Q4101		
E	0	0
C	11.0	11.0
B	0.2	0.2
Q4173		
E	0	0
C	0.5	0.5
B	0.1	0.1
Q5301		
E	3.2	3.2
C	9.2	9.2
B	3.9	3.9
Q5302		
E	6.1	6.1
C	6.7	6.7
B	9.2	9.2
Q5351		
E	0	0
C	6.0	6.0
B	0.1	0.1
Q5352		
E	5.4	5.4
C	9.2	9.2
B	6.0	6.0
Q5353		
E	3.7	3.7
C	3.0	3

NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES,
REFER TO BEGINNING OF SCHEMATIC SECTION.

Hi-Fi AUDIO CIRCUIT

[illegible]

MODE PIN NO.	REC	PLAY
IC4201		
1	2.6	2.6
2	2.6	2.6
3	2.6	2.6
4	2.6	2.6
5	2.6	2.6
6	5.1	5.1
7	2.6	2.6
8	2.6	2.6
9	0	0
10	2.6	2.6
11	2.6	2.6
12	2.6	2.6
13	2.6	2.6
14	—	—
15	2.6	2.6
16	4.2	4.2
17	4.0	4.0
18	0	0
19	2.6	2.6
20	2.6	2.6
21	0	0
22	0	0
23	0	0
24	—	—
25	0	2.0
26	2.6	2.6
27	2.6	2.6
28	0	0
29	1.6	1.6
30	2.7	2.7
31	0	0
32	—	—
33	2.6	2.6
34	2.6	2.6
35	2.6	2.6
36	—	—
37	2.6	2.6
38	2.6	2.6
39	12.0	12.0
40	0	0
41	—	—
42	0	0
43	2.6	2.6
44	2.6	2.6
45	2.6	2.6
46	2.6	2.6
47	—	—
48	—	—
IC4301		
1	0	0
2	0	0
3	2.6	2.6
4	2.6	2.6

MODE PIN NO.	REC	PLAY
5	2.6	2.6
6	0	0
7	0	0
8	0	0
9	5.1	5.1
10	12.0	12.0
11	5.1	5.1
12	2.6	2.6
13	2.6	2.6
14	2.6	2.6
15	—	—
16	12.0	12.0
IC4302		
1	2.6	2.6
2	2.6	2.6
3	2.6	2.6
4	0	0
5	2.6	2.6
6	2.6	2.6
7	2.6	2.6
8	12.0	12.0
IC5701		
1	11.9	11.9
2	5.4	5.4
3	5.4	5.4
4	2.4	2.4
5	2.6	2.6
6	2.4	2.4
7	0	0
8	2.5	2.5
9	2.4	2.4
10	2.6	2.6
11	2.4	2.4
12	5.0	5.0
13	11.9	11.9
14	4.6	4.6
15	1.1	1.1
16	2.6	2.6
17	1.1	1.1
18	0.7	0.7
19	1.1	1.1
20	2.4	2.4
21	1.1	1.1
22	0.8	0.8
23	11.9	11.9
24	1.2	1.2
25	2.5	2.5
26	1.2	1.2
27	0.7	0.7
28	11.9	11.9
IC5702		
1	2.5	2.5
2	2.5	2.5
3	2.6	2.6

MODE PIN NO.	REC	PLAY
4	2.4	2.4
5	2.4	2.4
6	1.3	1.3
7	0	0
8	0	0
9	11.3	11.3
10	11.3	11.3
11	11.3	11.3
12	2.6	2.6
13	2.4	2.4
14	2.4	2.4
15	2.4	2.4
16	11.3	11.3
IC9001		
1	4.2	4.2
2	4.1	4.1
3	4.2	4.2
4	9.1	9.1
5	2.4	2.4
6	0	0
7	4.2	4.2
8	3.7	3.7
9	1.3	1.3
10	4.0	4.0
11	4.0	4.0
12	4.0	4.0
13	5.0	5.0
14	4.3	4.3
15	4.1	4.1
16	4.2	4.2
17	0	0
18	5.2	5.2
19	0	0
20	4.1	4.1
21	1.8	1.8
22	4.2	4.2
23	4.2	4.2
24	4.2	4.2
25	4.2	4.2
26	1.8	1.8
27	4.2	4.2
28	3.3	3.3
29	4.2	4.2
30	4.1	4.1
IC9201		
1	3.1	3.1
2	3.7	3.7
3	5.1	5.1
4	4.2	4.2
5	0	0
6	5.1	5.1
7	4.5	4.5
8	2.8	2.8
9	2.8	2.8

MODE PIN NO.	REC	PLAY
Q4201		
E	0	0
C	0	0
B	4.0	4.0
Q4202		
E	0	0
C	0	0
B	4.5	4.5
Q4203		
E	0	0
C	0	0
B	0.1	0.1
Q4301		
E	12.0	12.0
C	12.0	12.0
B	0.1	0.1
Q4302		
E	0	0
C	5.1	5.1
B	5.1	5.1
Q4303		
E	12.0	12.0
C	0	0
B	5.1	5.1
Q4304		
E	0	0
C	12.0	12.0
B	12.0	12.0
Q4351		
E	14.0	14.0
C	14.0	14.0
B	12.0	12.0
Q5701		
E	0	0
C	10.1	10.1
B	0.3	0.3
Q5703		
E	0	0
C	4.6	4.6
B	0.1	0.1
Q5704		
E	2.3	2.3
C	11.9	11.9
B	2.8	2.8
Q5705		
E	2.1	2.1
C	11.9	11.9
B	2.8	2.8
Q5706		
E	2.3	2.3
C	11.9	11.9
B	2.7	2.7
Q5707		

[illegible]

TV MAIN CIRCUIT

MODE PIN NO.	REC	PLAY
IC451		
1	11.3	11.3
2	3.9	3.9
3	5.7	5.7
4	5.9	5.9
5	0	0
6	5.8	5.8
7	5.4	5.4
8	23.2	23.2
9	2.4	2.4
10	1.6	1.6
11	0	0
12	13.6	13.6
13	23.7	23.7
IC501		
1	1.8	1.8
2	1.8	1.8
3	0	0
4	11.9	11.9
IC801		
1	0	0
2	118.5	118.5
3	121.0	121.0
4	118.1	118.1
5	0	0
Q431		
E	3.4	3.4
C	0	0
B	2.8	2.8
Q432		
E	18.5	18.5
C	23.3	23.3
B	19.0	19.0
Q433		
E	19.0	19.0
C	14.3	14.3
B	18.4	18.4
Q434		
E	4.4	4.4
C	17.9	17.9
B	5.0	5.0
Q501		
E	1.7	1.7
C	0.4	0.4
B	1.8	1.8
Q506		
E	2.5	2.5
C	0	0
B	2.5	2.5
Q507		
E	0	0
C	2.5	2.5
B	0	0

[illegible]

CRT CIRCUIT

[illegible]

AUDIO/VIDEO JACK CIRCUIT

[illegible]

NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES,
REFER TO BEGINNING OF SCHEMATIC SECTION.

HEAD AMP CIRCUIT

MODE PIN NO.	REC	PLAY
IC2601		
1	13.0	13.0
2	13.0	13.0
3	0.1	0.1
4	0.6	0.6
5	0	0
6	2.6	2.6
7	2.4	2.4
8	1.3	1.3
9	0.9	0.9
10	2.9	2.9
11	5.1	5.1
12	3.9	3.9
13	3.9	3.9
14	3.9	3.9
15	1.2	1.2
16	13.2	13.2
17	13.0	13.0
18	0.1	0.1
IC3501		
1	2.6	2.6
2	0	4.2
3	0.3	1.4
4	0	0.7
5	0	0
6	0	0.7
7	0.2	1.4
8	0	0
9	0	0
10	0.2	2.2
11	0	0
12	0	0
13	0	0
14	0.2	2.2
15	—	—
16	6.3	0
17	6.3	0
18	6.3	0
19	—	—
20	—	—
21	—	—
22	—	—
23	—	—
24	—	—
25	11.9	0.5
26	5.0	5.0
27	0	0
28	0	0
29	0	0
30	2.7	2.3
31	5.1	0.1
32	0.1	0.1
33	0	0

MODE PIN NO.	REC	PLAY
34	0.1	0.7
35	12.0	12.0
36	0.1	5.0
IC4401		
1	5.1	5.1
2	0.8	0
3	0	2.6
4	0	0
5	3.6	2.1
6	2.0	2.0
7	5.1	5.1
8	0	0
9	0	0
10	3.0	3.0
11	1.4	0.6
12	4.8	0.5
13	0.8	0
14	0.6	0
15	3.7	0
16	—	—
17	0	0.9
18	0	0.9
19	0	0
20	0	0.9
21	0	0.9
22	0	0
23	4.1	0
24	4.1	0
TP3501	0	0
TP4402	4.0	0
TP4404	4.1	0
TP4405	3.6	2.1

CAPSTAN STATOR
CIRCUIT

MODE PIN NO.	REC	PLAY
IC2501		
1	13.0	13.0
2	13.0	13.0
3	13.5	13.5
4	1.2	1.2
5	1.2	1.2
6	1.2	1.2
7	0.1	2.7
8	0	0
9	2.6	2.6
10	1.5	1.5
11	2.6	2.6
12	0.5	0.5
13	3.9	3.9
14	3.9	3.9
15	0	0
16	0	0
17	---	---
18	13.5	13.5
19	2.8	2.8
20	0	0.7
21	2.8	2.8
22	0	0.7
23	0.2	1.4
24	0	0
25	0	0
26	13.5	13.5
27	---	---
28	5.1	5.1

DVD SUB CIRCUIT

MODE PIN NO.	REC	PLAY
IC1501		
1	134.5	134.5
2	0	0
3	0	0
4	16.3	16.3
5	1.6	1.6
IC1502		
1	11.3	11.3
2	10.2	10.2
3	4.4	4.4
4	15.9	15.9
IC1504		
1	12.0	12.0
2	10.2	10.2
3	0	0
IC1505		
1	0	0
2	—	—
3	18.0	18.0
4	14.8	14.8
5	18.8	18.8
IC1506		
1	0	0
2	5.1	5.1
3	5.0	5.0
4	4.9	4.9
5	5.3	5.3
IC4501		
1	2.2	2.2
2	2.6	2.6
3	0	0
4	2.6	2.6
5	2.2	2.2
6	5.6	5.6
7	8.2	8.2
8	2.2	2.2
9	16.6	16.6
10	0	0
11	2.2	2.2
12	8.2	8.2
IC4601		
1	4.7	4.7
2	4.6	4.6
3	4.6	4.6
4	4.7	4.7
5	4.4	4.4
6	4.4	4.4
7	4.6	4.6
8	0	0
9	5.0	5.0
10	5.0	5.0
11	5.0	5.0
12	5.0	5.0

DIGITAL AUDIO
CIRCUIT

MODE PIN NO.	REC	PLAY
IC4752		
1	2.4	2.4
2	2.5	2.5
3	2.4	2.4
4	0	0
5	2.5	2.5
6	2.4	2.4
7	2.5	2.5
8	4.9	4.9
IC4751		
1	0	0
2	4.9	4.9
3	2.5	2.5
Q1501		
E	12.0	12.0
C	12.0	12.0
B	12.0	12.0
Q1502		
E	0	0
C	12.0	12.0
B	5.1	5.1
Q4501		
E	0	0
C	0	0
B	0.7	0.7
Q4502		
E	0	0
C	0	0
B	0.7	0.7
Q4504		
E	16.7	16.7
C	18.0	18.0
B	17.2	17.2
Q4601		
E	9.0	9.0
C	12.0	12.0
B	9.9	9.9
TP4501	18.0	18.0
TP4502	0	0
TP4503	0	0
TP4504	0	0
TP4505	0	0
TP4506	0.7	0.7
TP4507	3.9	3.9
TP4601	4.7	4.7
TP4602	4.7	4.7
TP7001	4.3	4.3

NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES,
REFER TO BEGINNING OF SCHEMATIC SECTION.

SYSTEM CONTROL/SERVO

MODE PIN NO.	STOP	FF	REW
IC2501			
1	13.0	13.0	13.0
2	13.0	13.0	13.0
3	13.5	13.5	13.5
4	1.2	1.2	1.2
5	1.2	1.2	1.2
6	1.2	1.2	1.2
7	0.1	0.1	0.1
8	0	0	0
9	2.6	2.6	2.6
10	1.5	1.5	1.5
11	2.6	2.6	2.6
12	0.5	0.5	0.5
13	3.9	3.9	3.9
14	3.9	3.9	3.9
15	0	0	0
16	0	0	0
17	—	—	—
18	13.5	13.5	13.5
19	2.8	2.8	2.8
20	0	0	0
21	2.8	2.8	2.8
22	0	0	0
23	0.2	0.2	0.2
24	1.8	0	0
25	1.8	0	0
26	13.5	13.5	13.5
27	—	—	—
28	5.2	5.2	5.2
IC2601			
1	13.0	13.0	13.0
2	13.0	13.0	13.0
3	13.5	13.5	13.5
4	1.2	1.2	1.2
5	5.1	5.1	5.1
6	0.9	0.9	0.9
7	1.0	1.0	1.0
8	0.7	0.7	0.7
9	2.6	2.6	2.6
10	1.5	1.5	1.5
11	0	0	0
12	3.9	3.9	3.9
13	3.9	3.9	3.9
14	3.9	3.9	3.9
15	0.1	0.1	0.1
16	13.2	13.2	13.2
IC6201			
1	3.1	3.1	3.1
2	1.2	1.2	1.2
3	0	0	0
4	5.0	0	5.0
5	0	0	0
6	5.2	5.2	5.2

MODE PIN NO.	STOP	FF	REW
7	4.9	4.9	4.9
8	0	0	0
9	0	0	0
10	0	0	0
11	5.2	5.2	5.2
12	5.1	5.1	5.1
13	5.2	5.2	5.2
14	5.2	5.2	5.2
15	5.2	5.2	5.2
16	3.7	3.7	3.7
17	3.7	3.7	3.6
18	4.0	4.0	4.0
19	4.9	4.9	4.9
20	0	0	0
21	2.6	2.6	2.6
22	0	0	0
23	2.6	2.6	2.6
24	0	2.6	2.6
25	2.6	2.6	2.6
26	2.4	2.4	2.4
27	0	0	0
28	2.5	2.5	2.5
29	2.4	2.4	2.4
30	5.1	5.1	5.1
31	0	0	0
32	0	0	0
33	2.7	2.7	2.7
34	2.7	2.7	2.7
35	5.2	5.2	5.2
36	0	0	0
37	0	0	0
38	0	0	0
39	2.6	2.6	2.6
40	1.9	1.9	1.9
41	1.1	2.4	2.4
42	2.6	0	5.1
43	5.1	5.1	5.1
44	2.7	2.7	2.7
45	5.0	5.0	5.0
46	5.2	5.2	5.2
47	0	0	0
48	0	0	0
49	5.2	5.2	5.2
50	0	0	0
51	5.0	5.0	5.0
52	5.2	5.2	5.2
53	5.2	5.2	5.2
54	0	0	0
55	4.7	4.7	4.7
56	0	0	0
57	0	0	0
58	1.1	2.4	2.4
59	1.1	2.6	2.6

MODE PIN NO.	STOP	FF	REW
60	1.2	2.6	2.6
61	1.2	2.6	2.6
62	2.6	2.6	2.6
63	2.6	2.6	2.6
64	2.6	2.6	2.6
65	0	0	0
66	1.2	1.2	1.2
67	2.6	2.6	2.6
68	2.6	2.6	2.6
69	—	—	—
70	2.6	2.6	2.6
71	2.6	2.6	2.6
72	5.2	5.2	5.2
73	2.6	2.6	2.6
74	0	0	0
75	2.6	2.6	2.6
76	4.8	4.8	4.8
77	0	0	0
78	0	0	0
79	0	0	0
80	0	0	0
81	0	0	0
82	5.1	5.1	5.1
83	5.1	5.1	5.1
84	0	0	0
85	3.5	3.5	3.5
86	0	0	0
87	0	0	0
88	0	0	0
89	0	0	0
90	0	0	0
91	0	0	0
92	0	0	0
93	5.2	0	0
94	5.2	5.2	5.2
95	0	5.2	5.2
96	5.2	0	0
97	2.6	2.6	2.6
98	0	0	0
99	0	0	0
100	1.3	1.3	1.3
IC6002			
1	1.2	1.2	1.2
2	0	0	0
3	1.2	1.2	1.2
4	1.2	3.4	3.4
IC6003			
1	0	0	0
2	0	0	0
3	0	0	0
4	—	—	—
5	0	0	0
6	14.1	14.1	14.1

MODE PIN NO.	STOP	FF	REW
7	1.5	1.5	1.5
8	0	0	0
9	1.5	1.5	1.5
Q6001			
E	0	0	0
C	10.2	6.8	6.8
B	0.3	0.5	0.5
Q6002			
E	12.0	12.0	12.0
C	0.5	0.4	0.5
B	12.0	12.0	12.0
Q6003			
E	0	0	0
C	12.0	12.0	12.0
B	0	0	0
Q6009			
E	0	0	0
C	5.1	5.1	5.1
B	—	—	—
Q6010			
E	0	0	0
C	5.1	5.1	5.1
B	—	—	—
Q6011			
E	12.0	12.0	12.0
C	0.4	0.4	0.4
B	12.0	12.0	12.0
Q6012			
E	12.0	12.0	12.0
C	0	0	0
B	12.0	12.0	12.0
Q6013			
E	0	0	0
C	12.0	12.0	12.0
B	0	0	0
Q6014			
E	0	0	0
C	12.0	12.0	12.0
B	0	0	0
TP6001	5.1	—	—
TP6002	0	5.2	5.2
TP6003	3.5	3.8	3.8
TP6004	5.1	5.1	5.1
TP6005	5.1	5.1	5.1
TP6007	0	0	0
TP6008	0	0	0
TP6009	5.1	5.1	5.1
TP6010	0	0	0
TP6011	10.2	6.6	6.6
TP6013	2.7	2.7	2.7


MODE PIN NO.	STOP	FF	REW
TP6015	0	0	0
TP6020	4.8	4.8	4.8
TP6201	2.6	2.6	2.6
TP6202	2.6	2.6	2.6
TP6203	2.6	2.6	2.6
TP6204	1.2	1.2	1.2
TP6205	2.6	2.6	2.6
TP6206	2.6	2.6	2.6
TP6207	2.6	2.6	2.6
TP6208	2.5	2.5	2.5
TP6209	1.1	2.4	2.4

CIRCUIT BOARD LAYOUT

MAIN (POWER SUPPLY/SIGNAL PROCESS/OSD/TV Y/C PROCESS/SYSTEM CONTROL/SERVO/TIMER/OPERATION) C.B.A. VEPS3077A

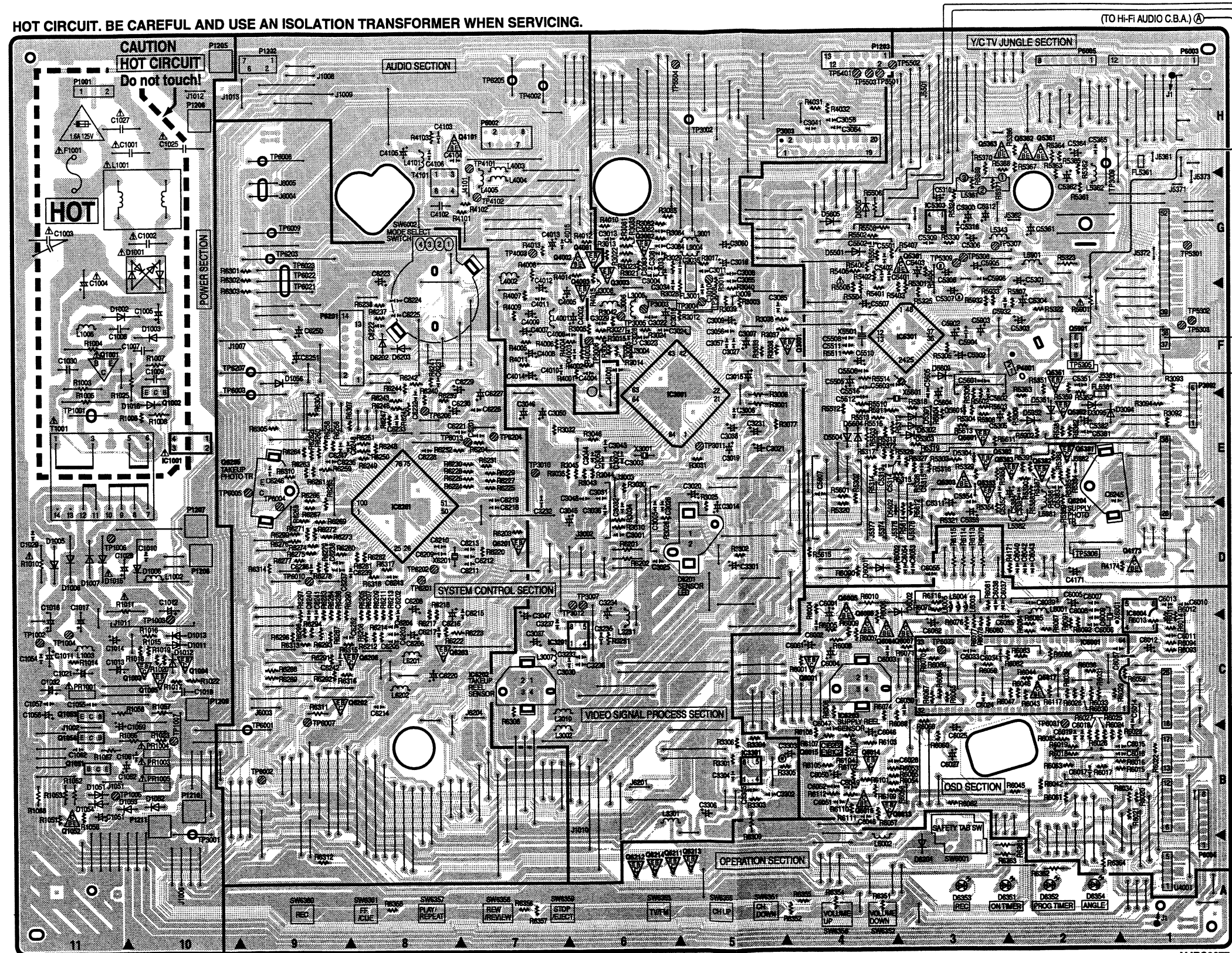
NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES,
REFER TO BEGINNING OF SCHEMATIC SECTION.

NOTE:
CIRCUIT BOARD LAYOUT INCLUDES COMPONENTS WHICH ARE NOT USED.
PLEASE REFER TO THE SCHEMATIC DIAGRAM AND PARTS LIST FOR PROPER PARTS CONTENT.

IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED BY THE SIGN  HAVE
SPECIAL CHARACTERISTICS IMPORTANT FOR SAFETY.
WHEN REPLACING ANY OF THESE COMPONENTS,
USE ONLY THE SPECIFIED PARTS.

CAUTION: FOR CONTINUED PROTECTION AGAINST FIRE HAZARD,
REPLACE ONLY WITH THE SAME TYPE 1.6A 125V FUSE.
ATTENTION: POUR UNE PROTECTION CONTINUE LES RISQUES
D'INCENDIE N'UTILISER QUE DES FUSIBLES DE MÊME
TYPE 1.6A 125V

HOT CIRCUIT. BE CAREFUL AND USE AN ISOLATION TRANSFORMER WHEN SERVICING.



VJBS3077

NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES,
REFER TO BEGINNING OF SCHEMATIC SECTION.

MAIN	
TARNSISTOR	
Q1001	F-11
Q1002	E-10
Q1003	C-11
Q1004	C-10
Q1005	C-10
Q1051	B-11
Q1052	B-11
Q1053	C-11
Q1056	B-11
Q3001	F-4
Q3002	G-6
Q3003	G-6
Q4001	G-6
Q4002	G-7
Q4003	G-6
Q4101	H-7
Q4173	D-1
Q5301	G-3
Q5302	E-3
Q5303	E-3
Q5351	F-2
Q5352	E-2
Q5353	E-3
Q5361	H-2
Q5362	H-2
Q5363	H-3
Q5381	E-2
Q5382	E-2
Q5383	E-3
Q5601	E-3
Q5901	F-2
Q6001	C-4
Q6004	C-4
Q6005	D-4
Q6006	D-4
Q6007	C-3
Q6013	B-4
Q6014	B-4
Q6015	B-4
Q6016	B-4
Q6017	C-2
Q6201	D-7
Q6202	C-8
Q6203	C-8
Q6204	E-2
Q6205	E-10
Q6206	C-8
Q6211	A-6
Q6212	A-6
Q6213	A-5
Q6214	A-6

MAIN	
IC	
IC1001	E-10
IC3001	F-6
IC3201	C-7
IC3301	B-5
IC5301	F-3
IC5303	G-3
IC6001	C-2
IC6004	D-1
IC6201	E-8
IC6202	C-7
IC6203	C-4

MAIN	
CONNECTOR	
P1001	H-11
P1202	H-9
P1203	H-4
P1205	H-10
P1206	H-10
P1207	D-10
P1208	D-10
P1209	C-10
P1210	B-10
P1211	B-10
P3003	H-5
P3092	F-1
P4001	F-2
P6002	H-7
P6003	H-1
P6004	A-1
P6005	H-2
P6201	F-9

MAIN	
TEST POINT	
TP1001	E-11
TP1002	C-11
TP1003	D-10
TP1004	C-11
TP1005	B-11
TP1006	D-11
TP1007	B-10
TP3001	B-10
TP3002	H-5
TP3003	F-6
TP3004	F-5
TP3005	F-6
TP3006	F-6
TP3007	D-6
TP3008	F-5
TP3009	G-2
TP3010	E-7
TP3011	E-5
TP3012	D-7
TP4002	H-7
TP4003	G-7
TP4101	H-7
TP4102	G-7
TP5301	G-1
TP5302	F-1
TP5303	F-1
TP5305	F-2
TP5306	D-2
TP5307	G-3
TP5308	G-3
TP5309	G-3
TP5401	H-4
TP5501	H-4
TP5502	H-3
TP5503	H-4
TP5504	H-6
TP6001	C-9
TP6002	B-9
TP6003	F-10
TP6004	E-9
TP6005	E-10
TP6007	C-9
TP6008	H-9
TP6009	G-9
TP6010	D-9
TP6013	E-8
TP6021	G-9
TP6022	G-9
TP6023	G-9
TP6031	C-2
TP6033	C-3
TP6201	D-8
TP6202	D-8
TP6203	G-9
TP6204	E-7
TP6205	H-7
TP6206	E-8
TP6207	F-10

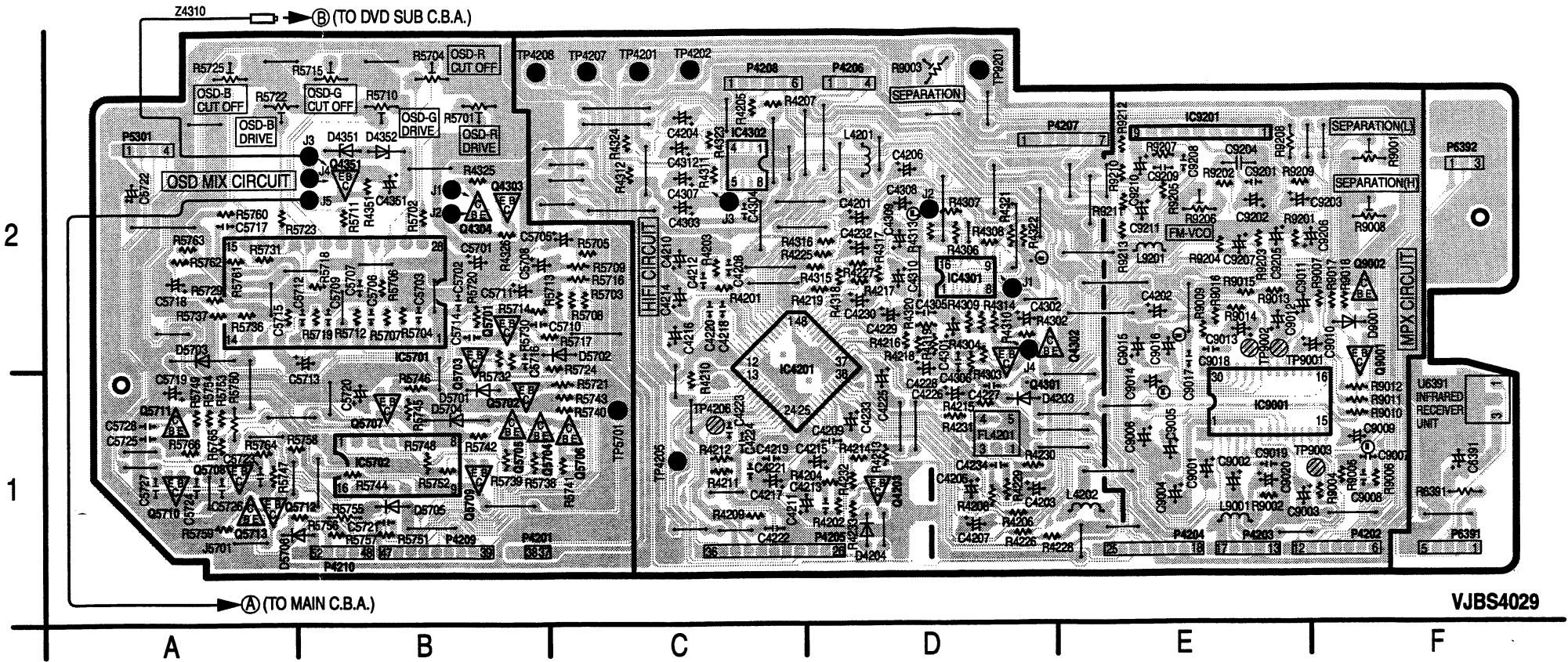
LEADLESS COMPONENT PARTS LOCATION GUIDE
MAIN C.B.A.

D5304	E-3	C3302	B-5	C6019	B-2	C6245	E-2	R3044	E-6	R5316	E-3	R5510	E-4	R6045	B-2	R6204	E-7	R6275	D-9
D5601	E-3	C3304	B-5	C6024	C-3	C6246	E-9	R3045	E-6	R5317	E-4	R5511	F-4	R6046	C-2	R6205	D-8	R6276	D-9
D5602	D-4	C3305	B-5	C6028	B-3	C6247	E-9	R3046	E-6	R5318	E-3	R5512	E-4	R6047	C-3	R6207	D-7	R6277	D-9
C1010	D-10	C4001	F-6	C6030	C-3	C6248	E-8	R3077	E-5	R5319	E-3	R5513	E-4	R6053	B-3	R6208	C-8	R6278	D-9
C1029	D-11	C4003	F-6	C6033	C-3	C6252	C-8	R3081	G-6	R5320	D-4	R5514	F-4	R6054	B-3	R6209	D-8	R6279	D-9
C1054	C-11	C4004	F-6	C6034	C-3	FL3001	F-5	R3082	G-6	R5321	D-3	R5515	E-4	R6055	B-3	R6211	D-8	R6280	D-9
C1055	C-11	C4006	F-7	C6035	C-3	FL5361	G-1	R3083	G-6	R5322	F-2	R5601	E-4	R6056	B-3	R6212	C-8	R6281	D-8
C1057	C-11	C4010	F-7	C6037	D-3	FL5381	F-2	R3084	G-6	R5324	G-3	R5602	E-3	R6057	B-4	R6213	D-8	R6282	D-8
C1061	B-10	C4011	F-7	C6038	D-3	L6003	D-3	R3085	G-6	R5325	F-3	R5603	E-3	R6058	C-3	R6214	C-8	R6283	D-9
C1062	B-11	C4015	G-6	C6039	D-2	L6004	D-3	R3092	E-1	R5326	E-3	R5604	E-3	R6059	C-1	R6217	C-8	R6284	D-9
C3001	D-6	C4103	H-8	C6040	D-2	L6005	D-3	R3093	F-1	R5327	E-3	R5611	E-3	R6060	C-2	R6218	D-8	R6286	D-9
C3002	E-6	C4104	H-8	C6042	D-2	R1006	E-11	R3094	E-1	R5328	E-3	R5612	D-3	R6061	B-2	R6220	D-7	R6287	C-9
C3003	E-6	C4106	H-8	C6043	D-2	R1014	C-11	R3231	C-6	R5329	E-3	R5613	E-3	R6062	B-3	R6222	C-8	R6288	C-9
C3004	G-6	C5309	G-3	C6047	C-4	R1015	C-10	R3301	B-5	R5330	G-3	R5614	D-3	R6063	B-2	R6223	C-7	R6289	C-9
C3005	D-6	C5313	E-4	C6048	B-4	R1016	C-10	R3302	D-5	R5351	F-2	R5615	D-4	R6064	C-3	R6224	E-8	R6290	D-9
C3006	E-5	C5314	E-4	C6049	B-4	R1017	C-10	R3303	B-5	R5352	E-2	R5902	E-2	R6065	C-3	R6225	E-7	R6291	C-9
C3008	G-5	C5315	E-3	C6051	B-4	R1018	C-10	R3304	B-5	R5353	F-2	R5932	F-3	R6066	C-3	R6226	E-8	R6292	C-9
C3010	F-5	C5351	F-2	C6052	B-4	R1019	C-10	R3305	B-5	R5354	D-3	R5933	F-3	R6067	C-3	R6227	E-7	R6293	C-9
C3011	G-5	C5352	D-3	C6053	D-3	R1020	C-10	R3306	B-5	R5358	E-3	R6001	C-4	R6068	C-4	R6228	E-8	R6294	C-6
C3013	G-6	C5354	E-3	C6054	D-3	R1022	C-10	R4001	F-7	R5359	E-2	R6002	D-3	R6069	C-3	R6229	E-7	R6295	C-6
C3022	F-6	C5365	H-2	C6055	D-3	R1023	B-10	R4002	F-6	R5361	G-2	R6004	D-4	R6070	C-3	R6230	E-8	R6296	C-3
C3023	F-6	C5381	E-2	C6057	C-2	R1051	B-11	R4003	F-6	R5362	G-2	R6005	C-4	R6071	C-3	R6231	E-7	R6297	D-9
C3024	F-6	C5383	D-2	C6201	E-7	R1056	B-11	R4004	F-7	R5363	H-2	R6006	D-4	R6074	C-4	R6232	E-8	R6299	D-9
C3025	D-6	C5385	D-2	C6202	D-8	R3003	F-5	R4005	F-7	R5364	H-2	R6007	C-4	R6075	D-3	R6237	F-8	R6301	G-9
C3026	D-6	C5401	G-4	C6203	C-8	R3004	F-6	R4006	F-7	R5365	H-2	R6008	C-4	R6076	C-3	R6238	F-8	R6302	G-9
C3027	F-5	C5402	G-4	C6204	C-8	R3005	F-6	R4007	F-7	R5366	H-2	R6009	C-4	R6077	C-3	R6239	F-8	R6303	F-9
C3028	F-6	C5501	G-4	C6205	C-8	R3010	D-6	R4008	G-7	R5367	H-2	R6011	C-1	R6078	C-3	R6240	F-8	R6304	E-9
C3029	F-6	C5502	G-4	C6209	D-8	R3012	F-6	R4009	F-7	R5368	H-3	R6012	D-1	R6080	C-3	R6241	F-8	R6305	E-9
C3030	C-7	C5506	F-4	C6210	D-8	R3013	G-6	R4010	G-6	R5369	G-3	R6013	C-1	R6081	D-3	R6242	F-8	R6306	C-7
C3031	E-6	C5508	F-4	C6211	D-7	R3014	F-6	R4011	F-7	R5370	H-3	R6014	C-1	R6082	C-2	R6243	E-8	R6307	E-8
C3032	D-6	C5511	F-4	C6212	D-7	R3015	F-6	R4012	G-6	R5371	G-3	R6015	B-1	R6083	C-2	R6244	F-8	R6308	C-4
C3033	G-6	C5512	E-4	C6213	D-7	R3016	F-5	R4013	G-7	R5372	E-4	R6016	B-1	R6084	C-2	R6245	E-8	R6310	E-9
C3034	G-6	C5516	F-4	C6214	C-8	R3017	G-5	R4014	G-7	R5381	E-2	R6017	B-2	R6085	C-2	R6246	E-8	R6312	A-9
C3035	G-5	C5601	F-3	C6215	D-7	R3021	G-6	R4015	F-6	R5382	E-2	R6018	B-2	R6086	C-2	R6247	E-8	R6313	C-9
C3036	D-6	C5602	E-3	C6217	C-8	R3022	G-6	R4031	H-4	R5383	E-2	R6019	B-2	R6087	C-2	R6248	E-8	R6314	D-9
C3041	H-4	C5603	F-4	C6218	D-7	R3023	G-6	R4032	H-4	R5384	E-2	R6020	B-1	R6090	D-4	R6249	E-8	R6315	C-9
C3043	E-6	C5605	F-3	C6219	E-7	R3024	F-6	R4101	G-7	R5385	E-2	R6021	B-1	R6091	C-2	R6250	E-8	R6316	C-9
C3044	E-6	C5607	E-4	C6221	E-8	R3025	E-5	R4102	G-7	R5386	D-2	R6022	B-1	R6092	C-2	R6251	E-8	R6317	D-8
C3048	E-7	C5904	F-3	C6222	F-8	R3026	D-6	R4103	H-8	R5387	E-2	R6023	B-1	R6093	C-1	R6256	E-9	R6318	D-8
C3053	E-6	C5906	G-3	C6224	F-8	R3027	F-6	R4171	D-2	R5388	D-2	R6024	B-2	R6094	C-1	R6258	E-9	R6351	A-4
C3054	H-4	C5932	F-3	C6225	F-8	R3028	F-6	R4174	D-2	R5389	D-2	R6025	C-2	R6101	B-4	R6259	E-9	R6352	A-5
C3055	G-5	C6002	C-4	C6226	E-7	R3029	G-6	R5301	G-3	R5390	E-2	R6026	B-2	R6102	B-4	R6260	E-9	R6354	A-4
C3056	F-5	C6003	C-4	C6228	E-8	R3030	E-6	R5302	E-4	R5391	E-2	R6027	C-2	R6103	B-4	R6261	E-9	R6355	A-4
C3057	F-5	C6006	C-2	C6231	F-8	R3031	E-5	R5303	E-3	R5401	F-4	R6028	C-2	R6104	B-4	R6262	E-9	R6356	A-7
C3058	H-4	C6007	C-2	C6232	E-8	R3032	E-7	R5304	E-3	R5402	G-4	R6029	C-1	R6105	B-4	R6263	E-9	R6357	A-7
C3081	G-6	C6008	C-2	C6233	E-8	R3033	F-5	R5305	F-3	R5403	F-4	R6030	C-2	R6106	B-4	R6264	E-9	R6358	A-8
C3082	G-6	C6009	C-2	C6235	E-9	R3034	D-6	R5306	E-3	R5404	F-3	R6031	C-2	R6107	B-4	R6265	E-9		
C3083	G-6	C6010	C-1	C6236	D-9	R3035	E-7	R5307	F-2	R5405	G-4	R6032	C-2	R6108	B-4	R6266	E-9		
C3084	G-6	C6011	C-1	C6237	D-9	R3036	F-5	R5308	E-3	R5406	G-4	R6033	C-2	R6109	B-4	R6267	D-9		
C3085	F-5	C6013	C-1	C6238	D-9	R3037	F-5	R5309	E-2	R5407	G-3	R6034	B-2	R6110	B-4	R6268	D-9		
C3232	D-7	C6014	C-1	C6239	D-8	R3038	F-5	R5311	E-4	R5501	G-4	R6035	B-2	R6111	B-4	R6269	D-9		
C3233	C-7	C6015	B-1	C6240	D-9	R3039	F-5	R5312	E-3	R5502	G-4	R6036	C-2	R6112	B-4	R6271	D-9		
C3235	C-6	C6016	B-1	C6241	D-9	R3040	F-5	R5313	E-4	R5504	F-4	R6042	B-2	R6116	D-3	R6272	D-9		
C3236	C-6	C6017	B-2	C6242	C-9	R3042	F-6	R5314	E-4	R5505	F-4	R6043	C-2	R6117	C-2	R6273	D-9		
C3237	C-7	C6018	B-2	C6243	D-8	R3043	E-6	R5315	E-3	R5508	G-4	R6044	C-2	R6203	D-7	R6274	D-9		

Hi-Fi AUDIO C.B.A. VEPS4029A

NOTE:
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REFER TO BEGINNING OF SCHEMATIC SECTION.

NOTE:
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PLEASE REFER TO THE SCHEMATIC DIAGRAM AND PARTS LIST FOR PROPER PARTS CONTENT.



LEADLESS COMPONENT PARTS LOCATION GUIDE
Hi-Fi AUDIO C.B.A.

C4208	C2	C5710	C2	R4201	C2	R4227	D2	R4317	D2	R5717	B2	R5703	C2	R5766	A1	R9213	E2
C4209	D1	C5712	B2	R4202	D1	R4228	D1	R4318	D2	R5718	B2	R5704	B2	R9002	E1	R9007	F2
C4212	C2	C5714	B2	R4203	C2	R4229	D1	R4319	D2	R5719	B2	R5745	B1	R9004	F1	R9009	E2
C4213	C1	C5715	A2	R4204	D1	R4230	D1	R4320	D2	R5720	B2	R5746	B1	R9005	F1	R9010	F1
C4218	C2	C5716	B2	R4205	C2	R4231	D1	R4321	D2	R5721	B1	R5747	A1	R9006	F1	R9011	F1
C4219	C1	C5717	A2	R4206	D1	R4232	D1	R4322	D2	R5723	A2	R5748	B1	R9013	E2	R9012	F1
C4220	C2	C5721	B1	R4207	C2	R4233	D1	R4323	C2	R5724	B2	R5749	A1	R9014	E2		
C4221	C1	C5723	A1	R4208	D1	R4302	D2	R4324	C2	R5729	A2	R5751	B1	R9015	E2		
C4222	C1	C5724	A1	R4209	C1	R4303	D2	R4325	B2	R5730	B2	R5752	B1	R9016	E2		
C4223	C1	C5725	A1	R4210	C1	R4304	D2	R4326	B2	R5731	A2	R5753	A1	R9017	F2		
C4224	C1	C5726	A1	R4211	C1	R4306	D2	R4351	B2	R5732	B2	R5754	A1	R9018	F2		
C4227	D1	C5727	A1	R4212	C1	R4307	D2	R5705	C2	R5736	A2	R5756	B1	R9201	E2		
C4234	D1	C5728	A1	R4213	D1	R4308	D2	R5706	B2	R5737	A2	R5757	B1	R9202	E2		
C4301	D2	C9007	F1	R4214	D1	R4309	D2	R5707	B2	R5738	B1	R5758	A1	R9203	E2		
C4304	C2	C9008	F1	R4215	D1	R4310	D2	R5708	C2	R5739	B1	R5759	A1	R9204	E2		
C4305	D2	C9017	E2	R4216	D2	R4311	C2	R5709	C2	R5740	C1	R5760	A2	R9205	E2		
C5702	B2	C9018	E2	R4217	D2	R4312	C2	R5711	B2	R5741	C1	R5761	A2	R9207	E2		
C5703	B2	C9019	E1	R4218	D2	R4313	D2	R5712	B2	R5742	B1	R5762	A2	R9209	E2		
C5706	B2	C9201	E2	R4219	D2	R4314	D2	R5713	C2	R5743	C1	R5763	A2	R9210	E2		
C5707	B2	C9208	E2	R4225	D2	R4315	D2	R5714	B2	R5744	B1	R5764	A1	R9211	E2		
C5709	B2	C9209	E2	R4226	D1	R4316	D2	R5716	C2	R5702	B2	R5765	A1	R9212	E2		


Hi-Fi AUDIO	
IC	
IC4201	C2
IC4301	D2
IC4302	C2
IC5701	B2
IC5702	B1
IC9001	E1
IC9201	E2
TRANSISTOR	
Q4203	D1
Q4301	D1
Q4302	E2
Q4303	B2
Q4304	B2
Q4351	B2
Q5701	B2
Q5702	B1
Q5703	B1
Q5704	B1
Q5705	B1
Q5706	C1
Q5707	B1
Q5708	A1
Q5709	B1
Q5710	A1
Q5711	A1
Q5712	A1
Q5713	A1
Q9001	F2
Q9002	F2

Hi-Fi AUDIO	
CONNECTOR	
P4201	B1
P4202	F1
P4203	E1
P4204	E1
P4205	D1
P4206	D2
P4207	D2
P4208	C2
P4209	B1
P4210	B1
P5301	A2
P6391	F1
P6392	F2
TEST POINT	
TP4201	C2
TP4202	C2
TP4205	C1
TP4206	C1
TP4207	C2
TP4208	B2
TP5701	B1
TP9001	E2
TP9002	E2
TP9003	F1
TP9201	D2
ADJUSTMENT	
R5701	B2
R5704	B2
R5710	B2
R5722	A2
R5725	A2
R9001	F2
R9003	D2
R9008	F2
R9206	E2

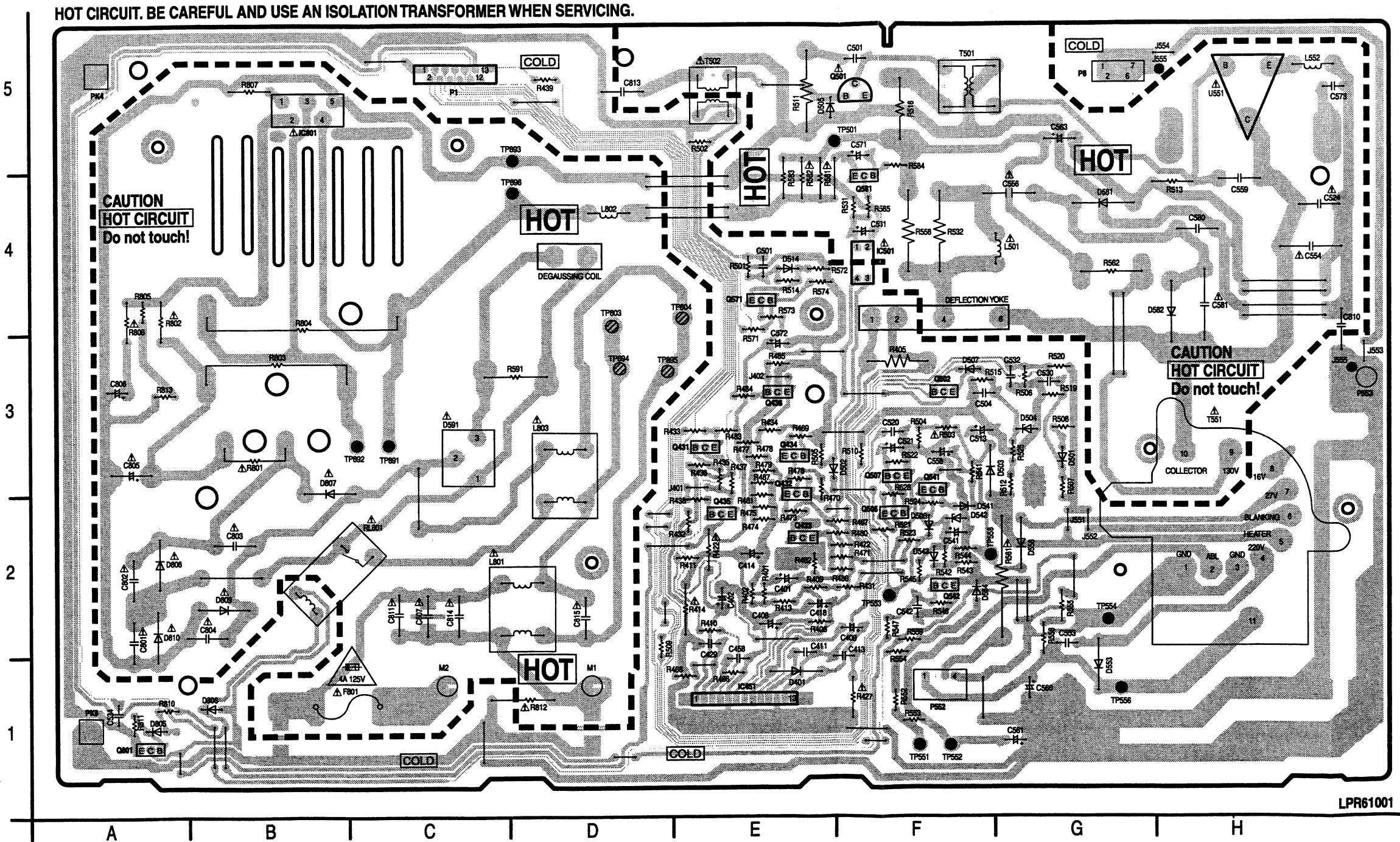
TV MAIN C.B.A. LRP61011A

NOTE:
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REFER TO BEGINNING OF SCHEMATIC SECTION.

NOTE:
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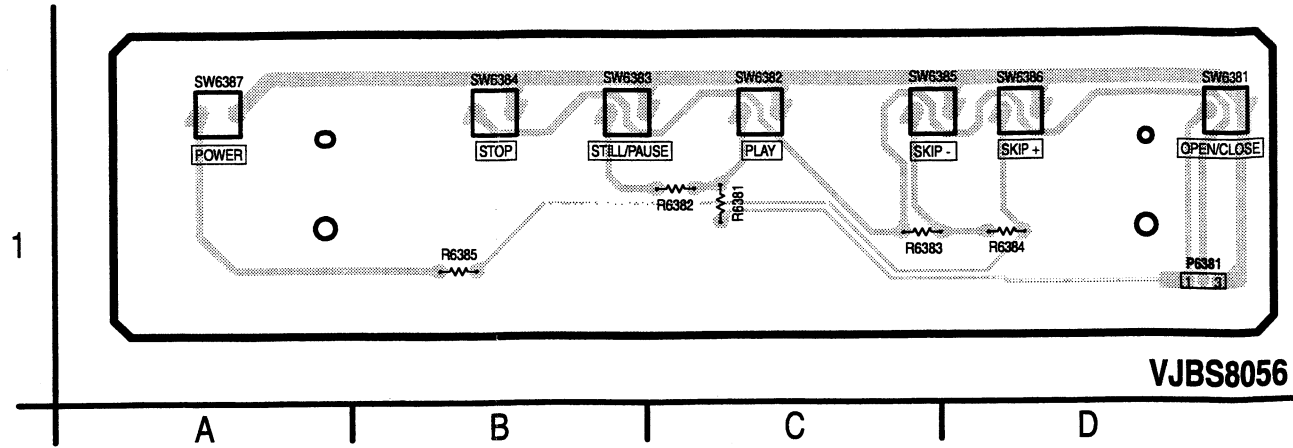
IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED BY THE SIGN  HAVE
SPECIAL CHARACTERISTICS IMPORTANT FOR SAFETY.
WHEN REPLACING ANY OF THESE COMPONENTS,
USE ONLY THE SPECIFIED PARTS.

CAUTION: FOR CONTINUED PROTECTION AGAINST FIRE HAZARD,
REPLACE ONLY WITH THE SAME TYPE 4A 125V FUSE.
ATTENTION: POUR UNE PROTECTION CONTINUE LES RISQUES
D'INCENDIE N'UTILISER QUE DES FUSIBLE DE MÊME
TYPE 4A 125V



TV MAIN	
IC	
IC451	E1
IC501	F4
TRANSISTOR	
Q431	E3
Q432	E3
Q433	E2
Q434	E3
Q435	E2
Q436	E3
Q501	F5
Q502	F3
Q506	F2
Q507	F3
Q541	F3
Q542	F3
Q571	E4
Q581	F4
Q801	A1
CONNECTOR	
P1	C5
P552	F1
P553	H3
P8	G5
PK4	A5
PK9	A1
TEST POINT	
TP501	F5
TP551	F1
TP552	F1
TP553	F2
TP554	G2
TP556	G1
TP558	F2
TP803	D4
TP804	E4
TP891	C3
TP892	C3
TP893	D5
TP894	D3
TP895	D3
TP896	D4

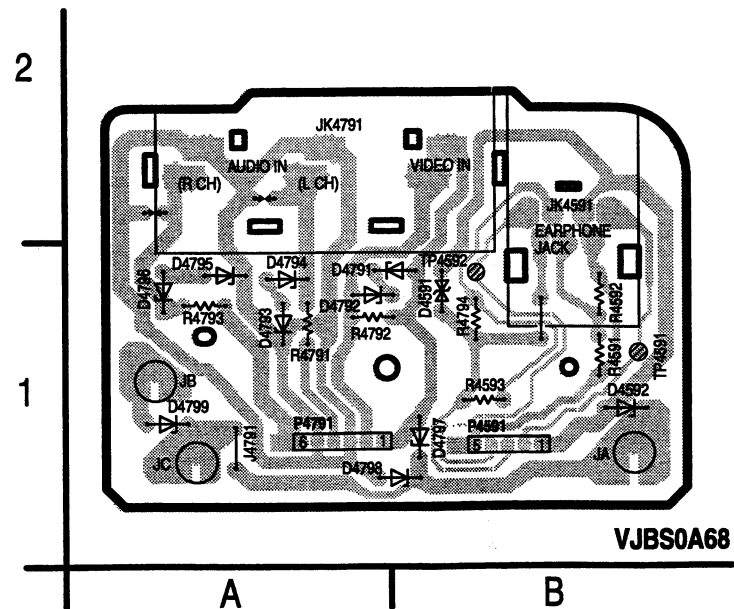
OPERATION C.B.A. VEPS8056A



NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES,
REFER TO BEGINNING OF SCHEMATIC SECTION.

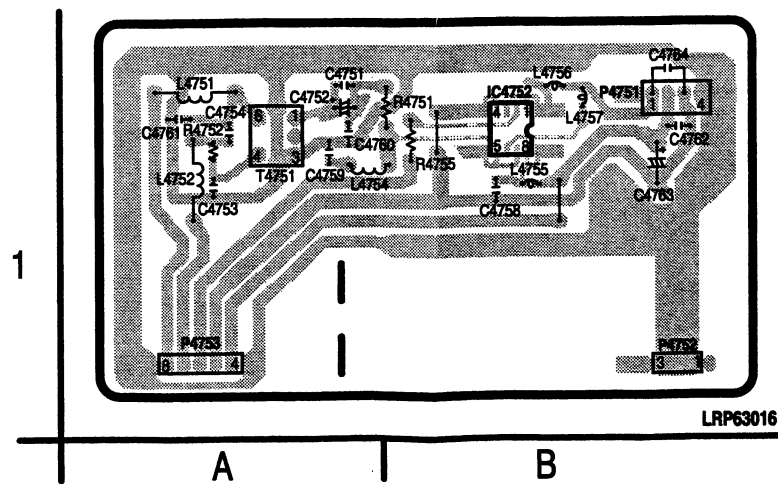
AUDIO/VIDEO JACK C.B.A. VEPS0A68A

NOTE:
CIRCUIT BOARD LAYOUT INCLUDES COMPONENTS WHICH ARE NOT USED.
PLEASE REFER TO THE SCHEMATIC DIAGRAM AND PARTS LIST FOR PROPER PARTS CONTENT.



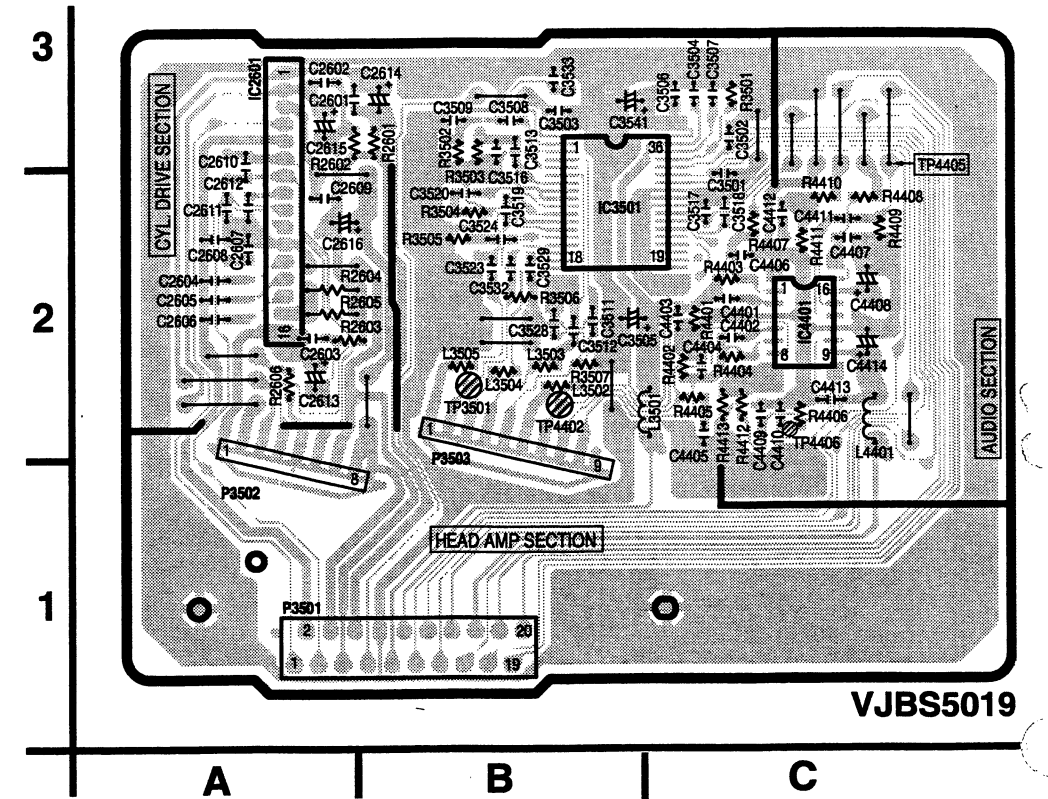
DIGITAL AUDIO C.B.A. LRP63016A

NOTE:
CIRCUIT BOARD LAYOUT INCLUDES COMPONENTS WHICH ARE NOT USED.
PLEASE REFER TO THE SCHEMATIC DIAGRAM AND PARTS LIST FOR PROPER PARTS CONTENT.



Hi-Fi AUDIO/VIDEO HEAD AMP C.B.A. VEPS5019A

NOTE:
CIRCUIT BOARD LAYOUT INCLUDES COMPONENTS WHICH ARE NOT USED.
PLEASE REFER TO THE SCHEMATIC DIAGRAM AND PARTS LIST FOR PROPER PARTS CONTENT.



HI-FI AUDIO/VIDEO HEAD AMP	
IC	
IC2601	A-3
IC3501	B-2
IC4401	C-2
CONNECTOR	
P3501	A-1
P3502	A-1
P3503	B-1
TEST POINT	
TP3501	B-2
TP4402	B-2
TP4405	C-3
TP4406	C-2

LEADLESS COMPONENT PARTS LOCATION GUIDE


Hi-Fi AUDIO/VIDEO HEAD AMP C.B.A.

R2601 B-3	R4409 C-2	C3503 B-3	C3533 B-3
R2602 A-3	R4410 C-2	C3504 C-3	C4401 C-2
R2603 A-2	R4411 C-2	C3506 C-3	C4402 C-2
R2606 A-2	R4412 C-1	C3507 C-3	C4403 C-2
R3501 C-3	R4413 C-1	C3508 B-3	C4404 C-2
R3502 B-3	C2601 A-3	C3509 B-3	C4405 C-2
R3503 B-2	C2602 A-3	C3511 B-2	C4406 C-2
R3504 B-2	C2603 A-2	C3512 B-2	C4407 C-2
R3505 B-2	C2604 A-2	C3513 B-3	C4409 C-1
R3506 B-2	C2605 A-2	C3516 B-2	C4410 C-1
R3507 B-2	C2606 A-2	C3517 C-2	C4411 C-2
R4401 C-2	C2607 A-2	C3518 C-2	C4412 C-2
R4402 C-2	C2608 A-2	C3519 B-2	C4413 C-2
R4403 C-2	C2609 A-2	C3520 B-2	L3502 B-2
R4404 C-2	C2610 A-3	C3523 B-2	L3503 B-2
R4405 C-2	C2611 A-2	C3524 B-2	L3504 B-2
R4406 C-2	C2612 A-2	C3528 B-2	L3505 B-2
R4407 C-2	C3501 C-2	C3529 B-2	
R4408 C-2	C3502 C-3	C3532 B-2	

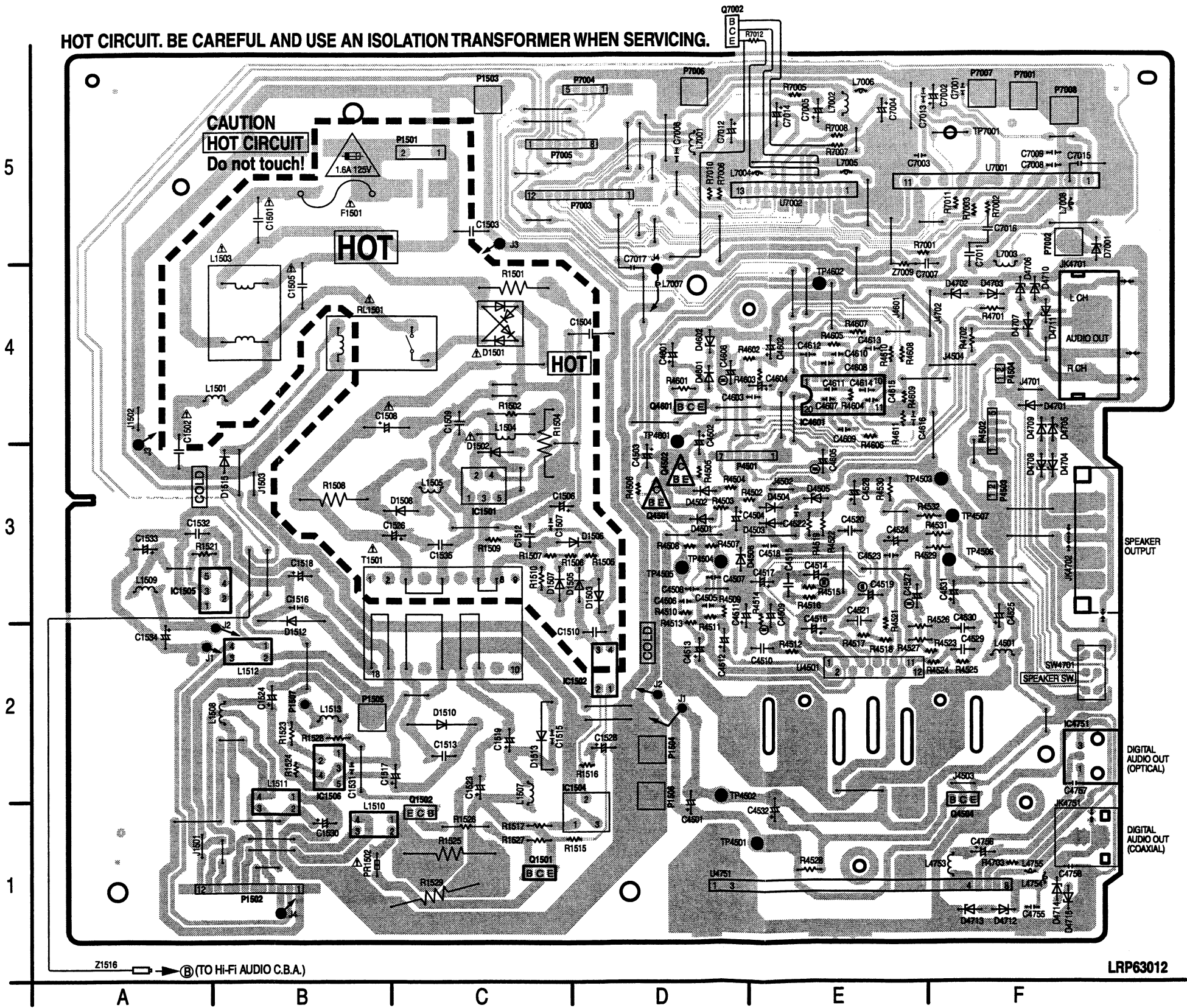
DVD SUB C.B.A. LRP63012A

NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES,
REFER TO BEGINNING OF SCHEMATIC SECTION.

NOTE:
CIRCUIT BOARD LAYOUT INCLUDES COMPONENTS WHICH ARE NOT USED.
PLEASE REFER TO THE SCHEMATIC DIAGRAM AND PARTS LIST FOR PROPER PARTS CONTENT.

IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED BY THE SIGN  HAVE
SPECIAL CHARACTERISTICS IMPORTANT FOR SAFETY.
WHEN REPLACING ANY OF THESE COMPONENTS,
USE ONLY THE SPECIFIED PARTS.

CAUTION: FOR CONTINUED PROTECTION AGAINST FIRE HAZARD,
REPLACE ONLY WITH THE SAME TYPE 1.6A 125V FUSE.
ATTENTION: POUR UNE PROTECTION CONTINUE LES RISQUES
D'INCENDIE N'UTILISER QUE DES FUSIBLE DE MÊME
TYPE 1.6A 125V



DVD SUB	
IC	
IC1501	C3
IC1502	D2
IC1504	C2
IC1505	A3
IC1506	B2
IC4601	E4
IC4751	F2
TRANSISTOR	
Q1501	C1
Q1502	C1
Q4501	D3
Q4502	D3
Q4504	F1
Q4601	D4
TEST POINT	
TP4501	E1
TP4502	D2
TP4503	F3
TP4504	D3
TP4505	D3
TP4506	F3
TP4507	F3
TP4601	D4
TP4602	E4
TP7001	F5

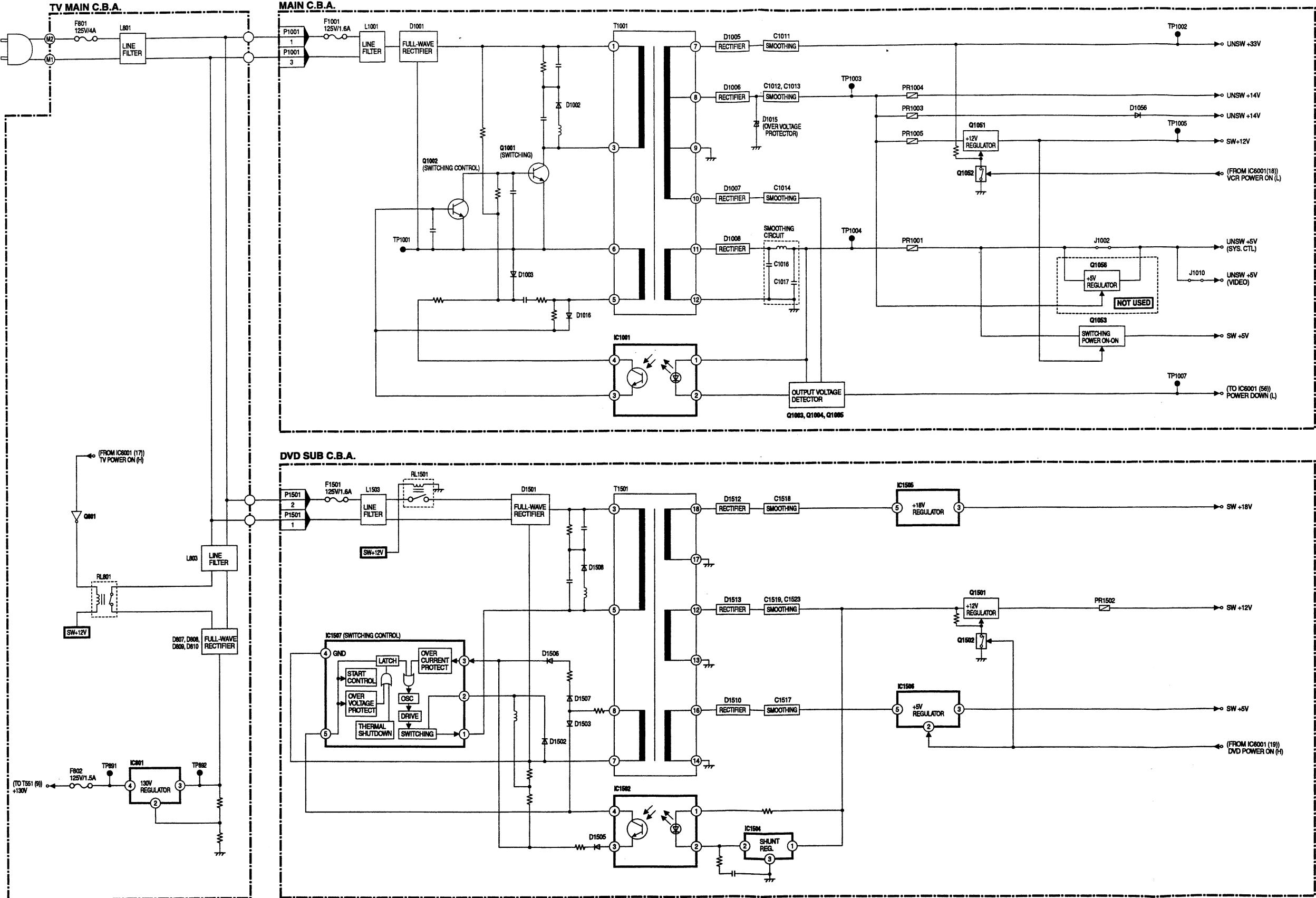
DVD SUB	
CONNECTOR	
P1501	C5
P1502	B1
P1503	C5
P1504	D2
P1505	B2
P1506	D2
P1507	B2
P4501	D3
P4502	F3
P4503	F3
P4504	F4
P7001	F5
P7002	F5
P7003	D5
P7004	D5
P7005	C5
P7006	D5
P7007	F5
P7008	F5

LEADLESS COMPONENT PARTS LOCATION GUIDE
DVD SUB C.B.A.

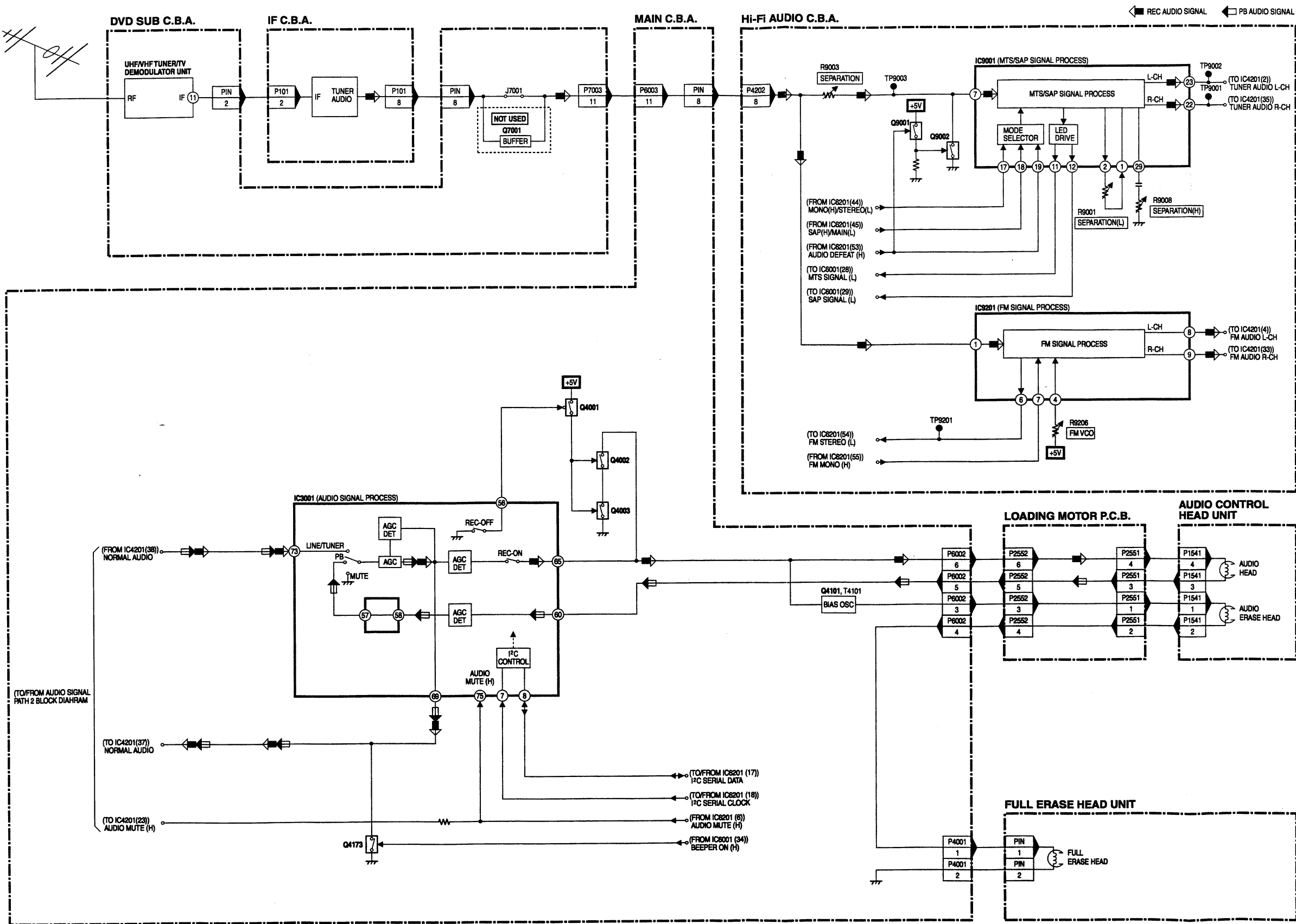
C1507	C3	C7009	F5	R4517	E2
C1515	C2	C7010	F5	R4518	E2
C1516	B3	C7013	E5	R4521	E2
C1531	B2	L7004	E5	R4523	F2
C4505	D3	L7005	E5	R4524	F2
C4506	D3	L7006	E5	R4525	F2
C4507	D3	R1505	D3	R4602	E4
C4508	D3	R1506	C3	R4603	E4
C4518	E3	R1507	C3	R4604	E4
C4522	E3	R1509	C3	R4605	E4
C4523	E3	R1515	C1	R4606	E4
C4603	D4	R1516	D2	R4607	E4
C4607	E4	R1524	B2	R4608	E4
C4608	E4	R4502	D3	R4609	E4
C4609	E4	R4503	D3	R4610	E4
C4610	E4	R4504	D3	R4611	E4
C4611	E4	R4505	D3	R7001	E5
C4612	E4	R4506	D3	R7002	F5
C4613	E4	R4507	D3	R7003	F5
C4614	E4	R4508	D3	R7005	E5
C4615	E4	R4509	D3	R7006	D5
C4616	E4	R4510	D3	R7007	E5
C4755	F1	R4511	D3	R7008	E5
C4757	F2	R4512	E2	R7010	D5
C7001	F5	R4513	D3	R7011	F5
C7003	E5	R4514	E3		
C7006	D5	R4515	E3		
C7008	F5	R4516	E3		

BLOCK DIAGRAMS

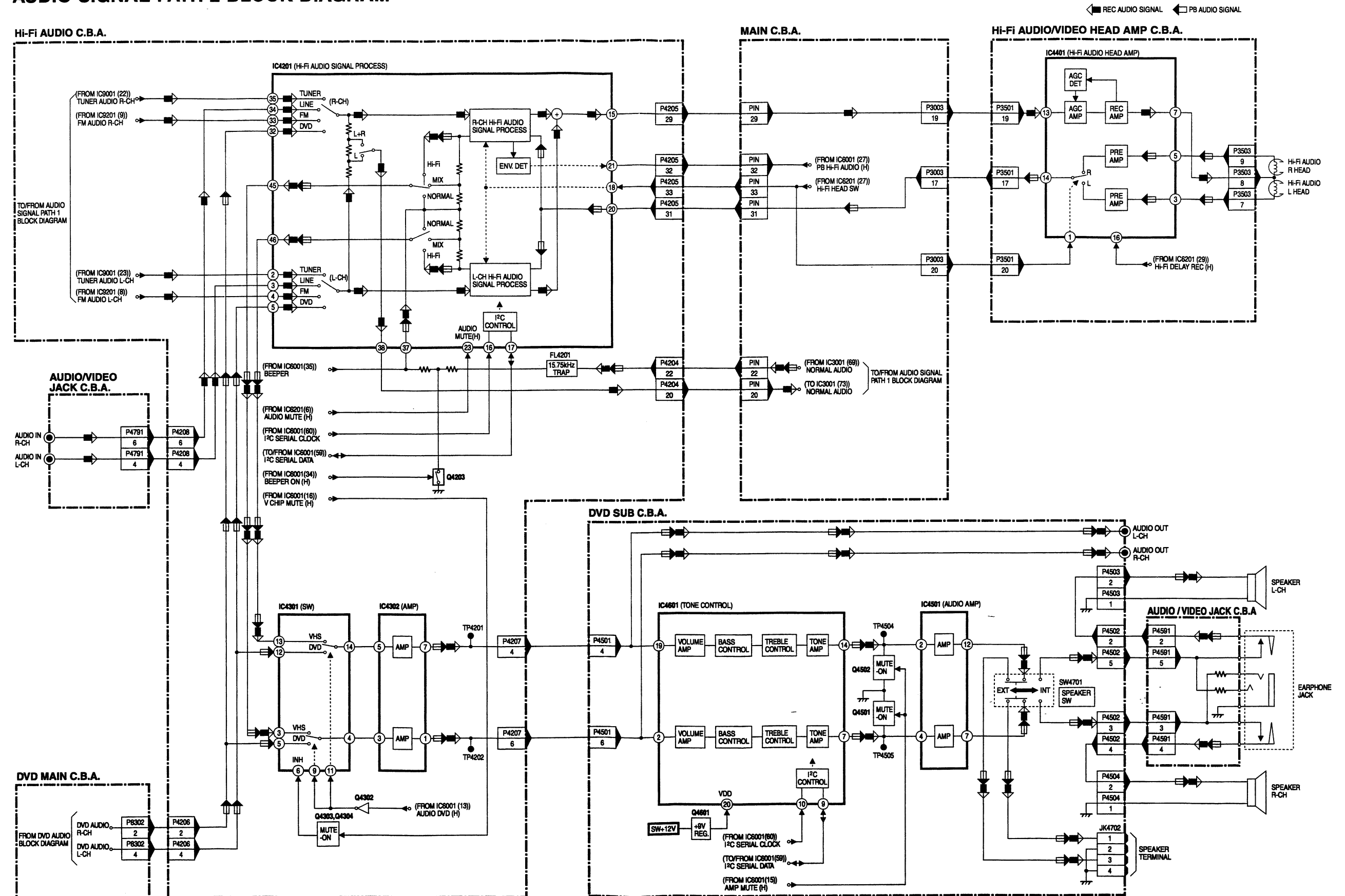
POWER SUPPLY BLOCK DIAGRAM



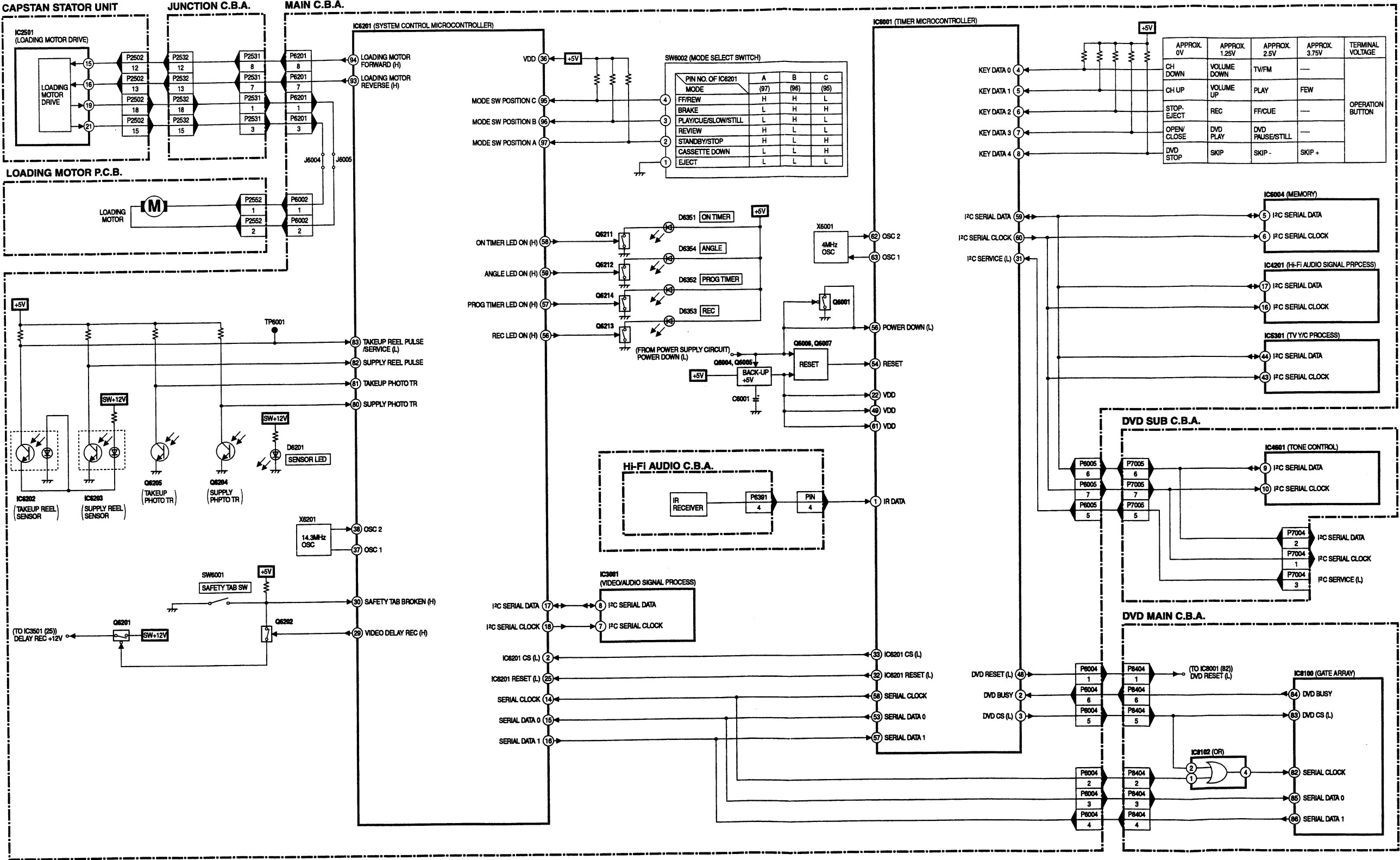
AUDIO SIGNAL PATH 1 BLOCK DIAGRAM



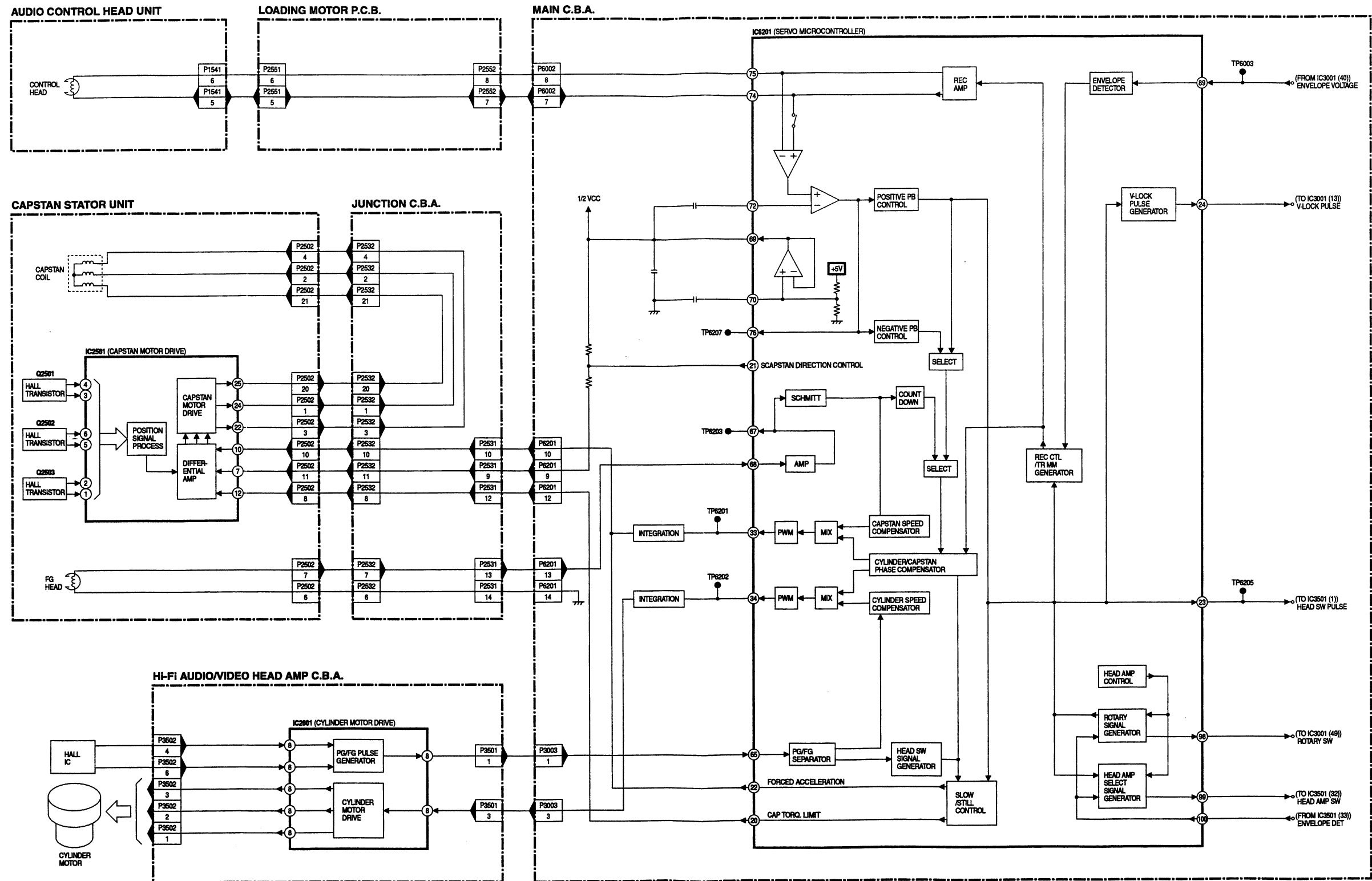
AUDIO SIGNAL PATH 2 BLOCK DIAGRAM



SYSTEM CONTROL BLOCK DIAGRAM



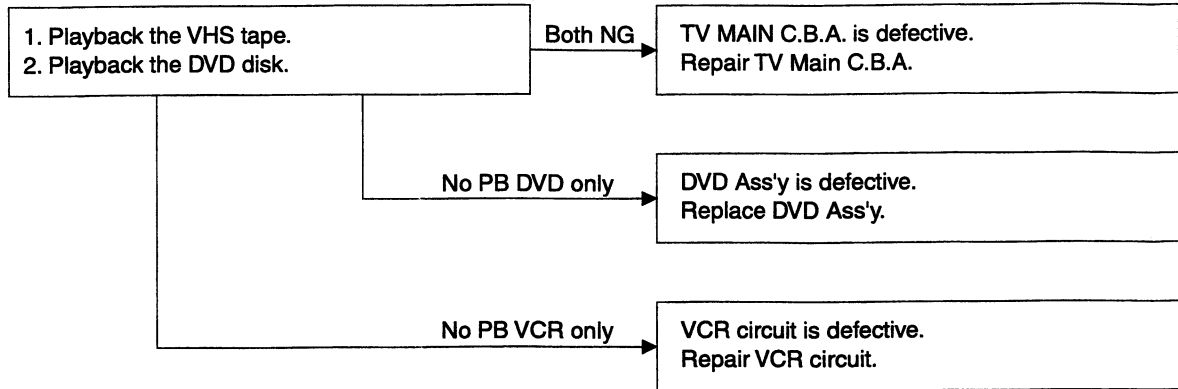
SERVO BLOCK DIAGRAM



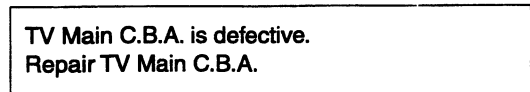
TROUBLESHOOTING HINTS

How to confirm which of DVD Ass'y or Other circuit is defective.

1) Confirm DVD operation and VCR operation



2) No Power



EXPLODED VIEWS

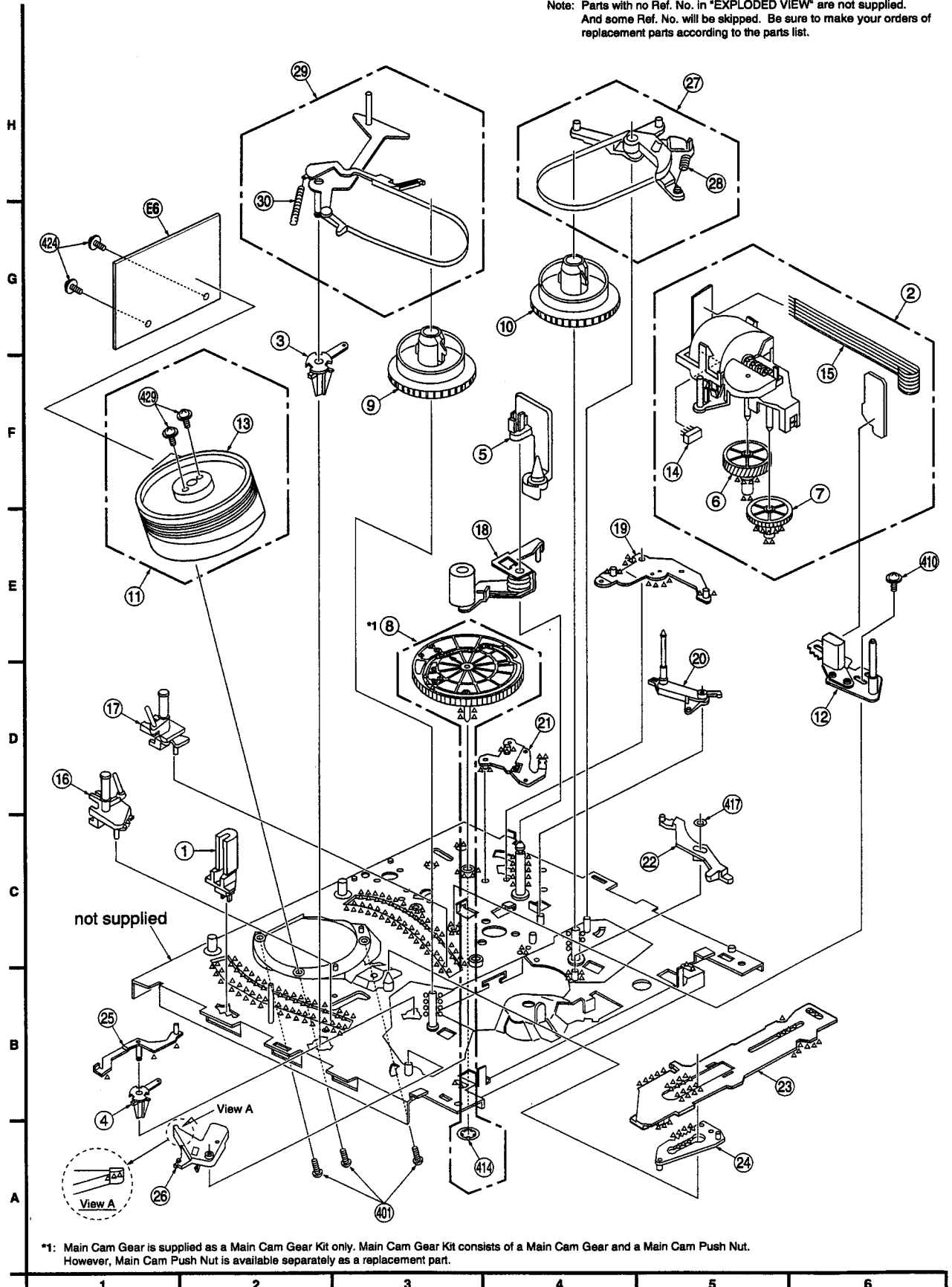
① MECHANISM (TOP) SECTION

LUBRICATION POINTS

When the marked parts are replaced, apply the recommended lubricants or adhesive for better maintenance of the unit.

Mark	Kind of Lubricant	Availability	Part Number
○ ○ ○	Spindle Oil	Purchase from Local Supplier	-----
△ △ △	Grease	Available from Factory	VFKS0081

Note: Parts with no Ref. No. in "EXPLODED VIEW" are not supplied.
And some Ref. No. will be skipped. Be sure to make your orders of replacement parts according to the parts list.



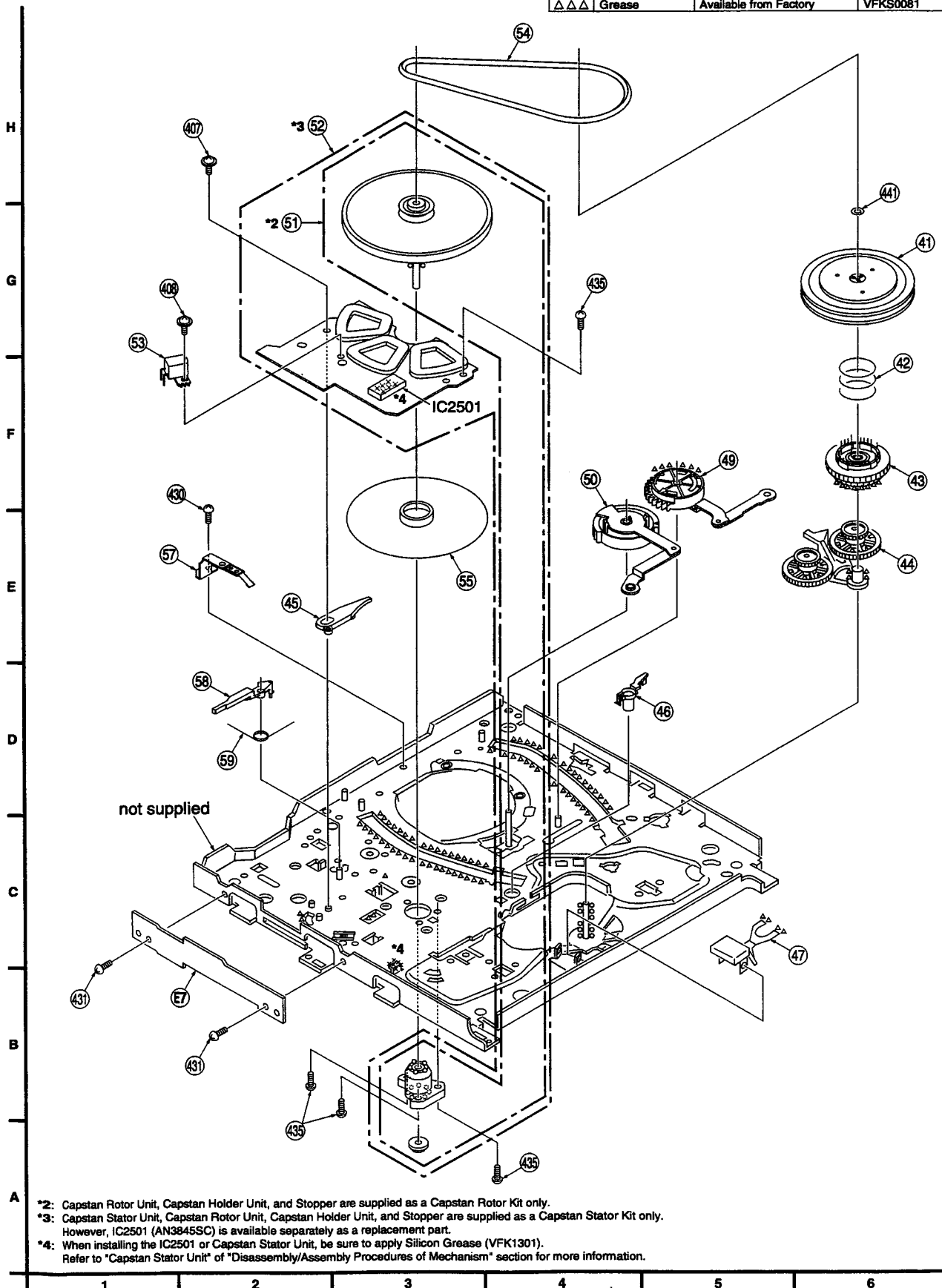
*1: Main Cam Gear is supplied as a Main Cam Gear Kit only. Main Cam Gear Kit consists of a Main Cam Gear and a Main Cam Push Nut.
However, Main Cam Push Nut is available separately as a replacement part.

② MECHANISM (BOTTOM) SECTION

LUBRICATION POINTS

When the marked parts are replaced, apply the recommended lubricants or adhesive for better maintenance of the unit.

Mark	Kind of Lubricant	Availability	Part Number
XXX	Silicon Grease	Available from Factory	VFK1301
OOO	Spindle Oil	Purchase from Local Supplier	-----
AAA	Grease	Available from Factory	VFKS0081

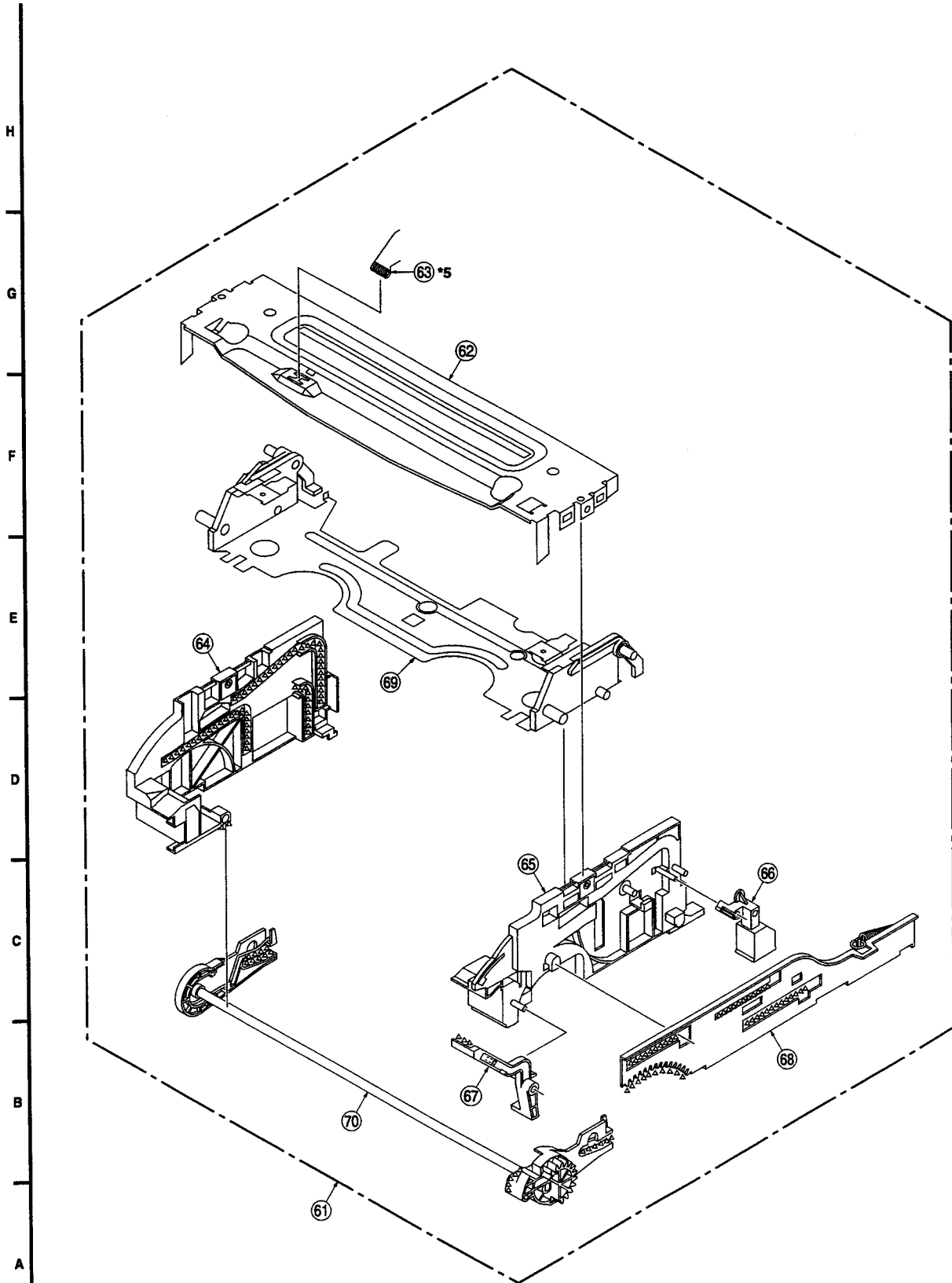


③ CASSETTE UP COMPARTMENT SECTION

LUBRICATION POINTS

When the marked parts are replaced, apply the recommended lubricants or adhesive for better maintenance of the unit.


Mark	Kind of Lubricant	Availability	Part Number
△△△	Grease	Available from Factory	VFKS0081

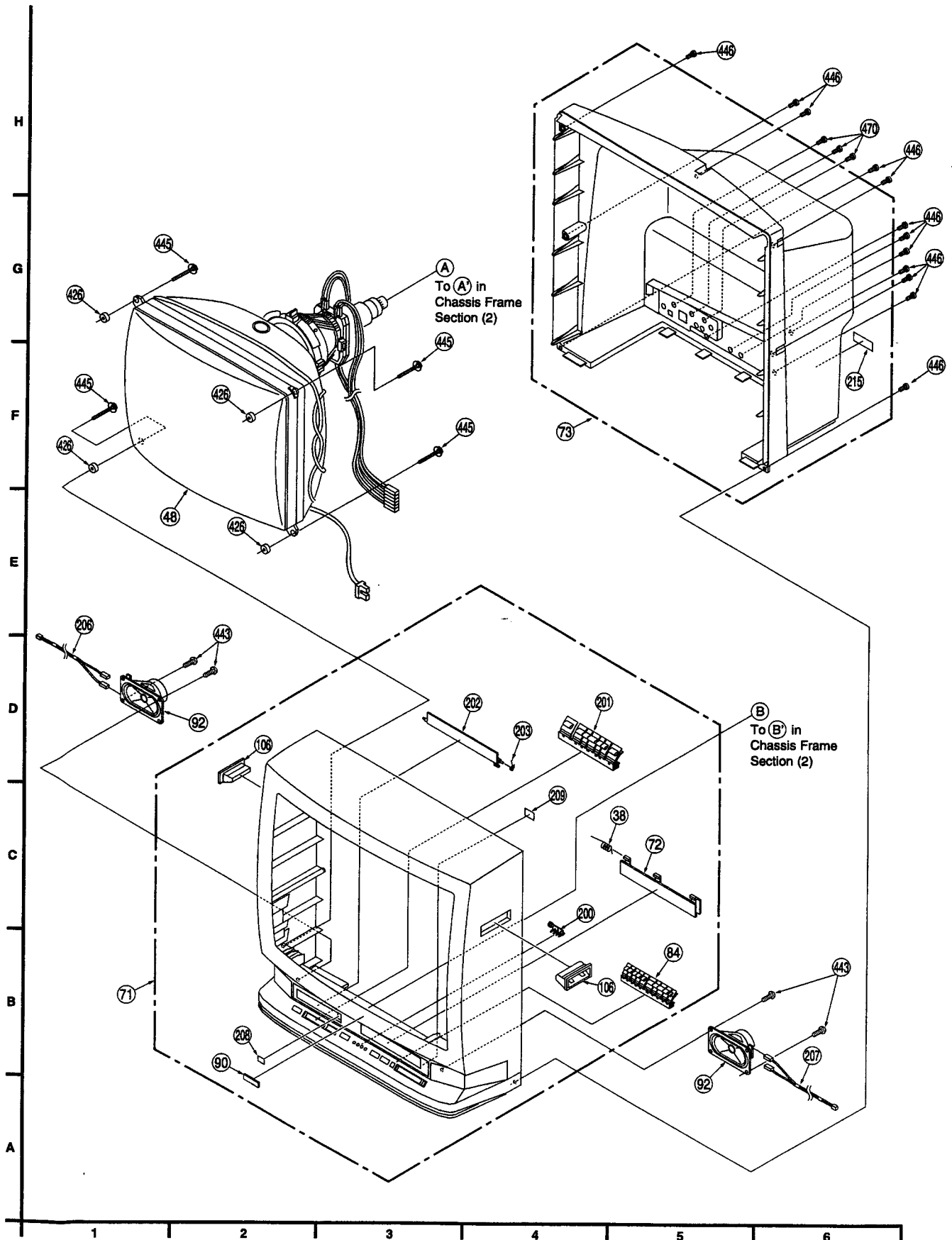


*5: As an ESD Countermeasure, the spring should be installed in the proper position.
Please refer to Disassembly/Assembly Procedure of Mechanical Section for more information.

4 CHASSIS FRAME SECTION (1)


IMPORTANT SAFETY NOTICE

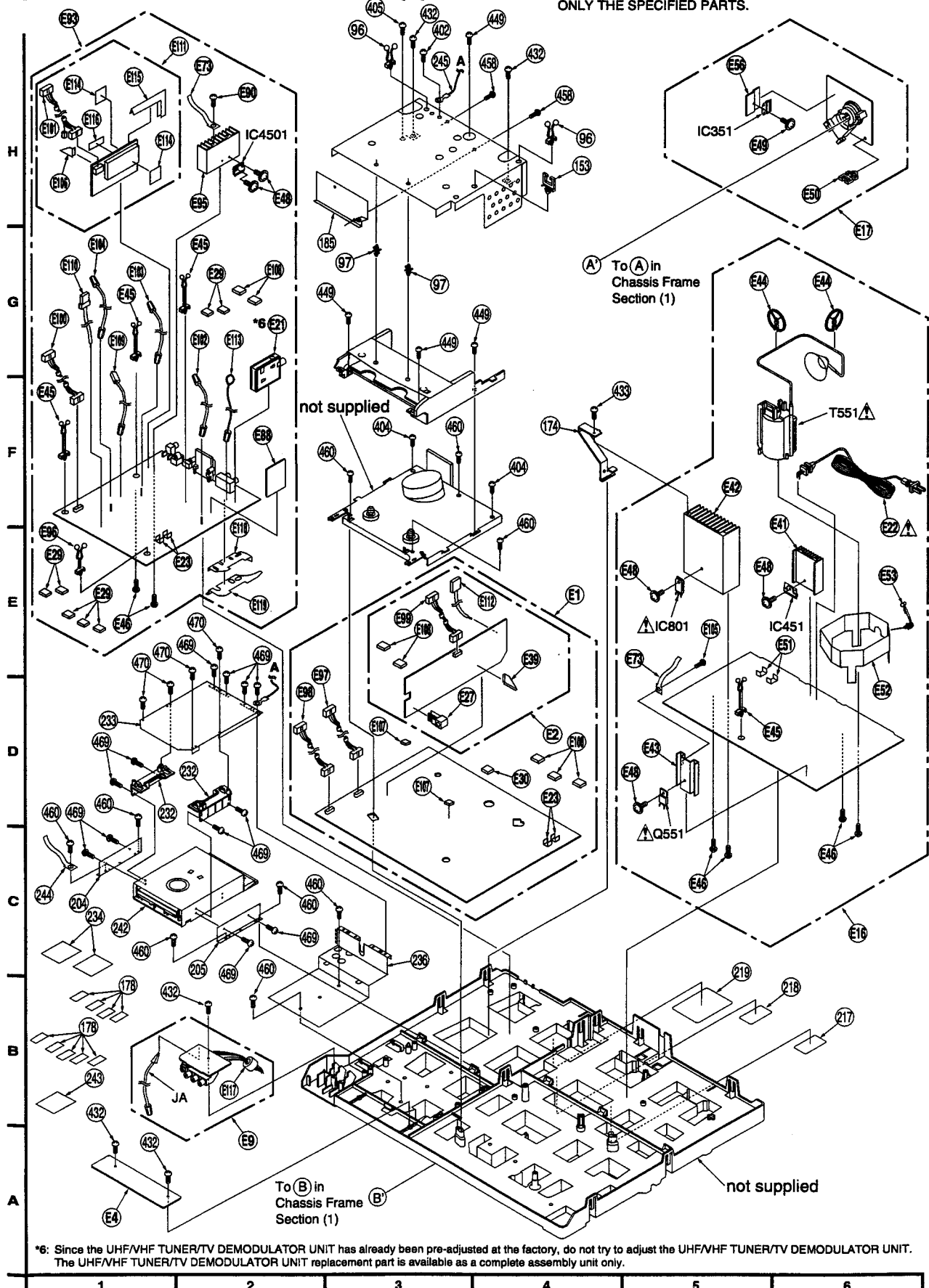
COMPONENTS IDENTIFIED BY THE SIGN  HAVE SPECIAL CHARACTERISTICS IMPORTANT FOR SAFETY. WHEN REPLACING ANY OF THESE COMPONENTS, USE ONLY THE SPECIFIED PARTS.



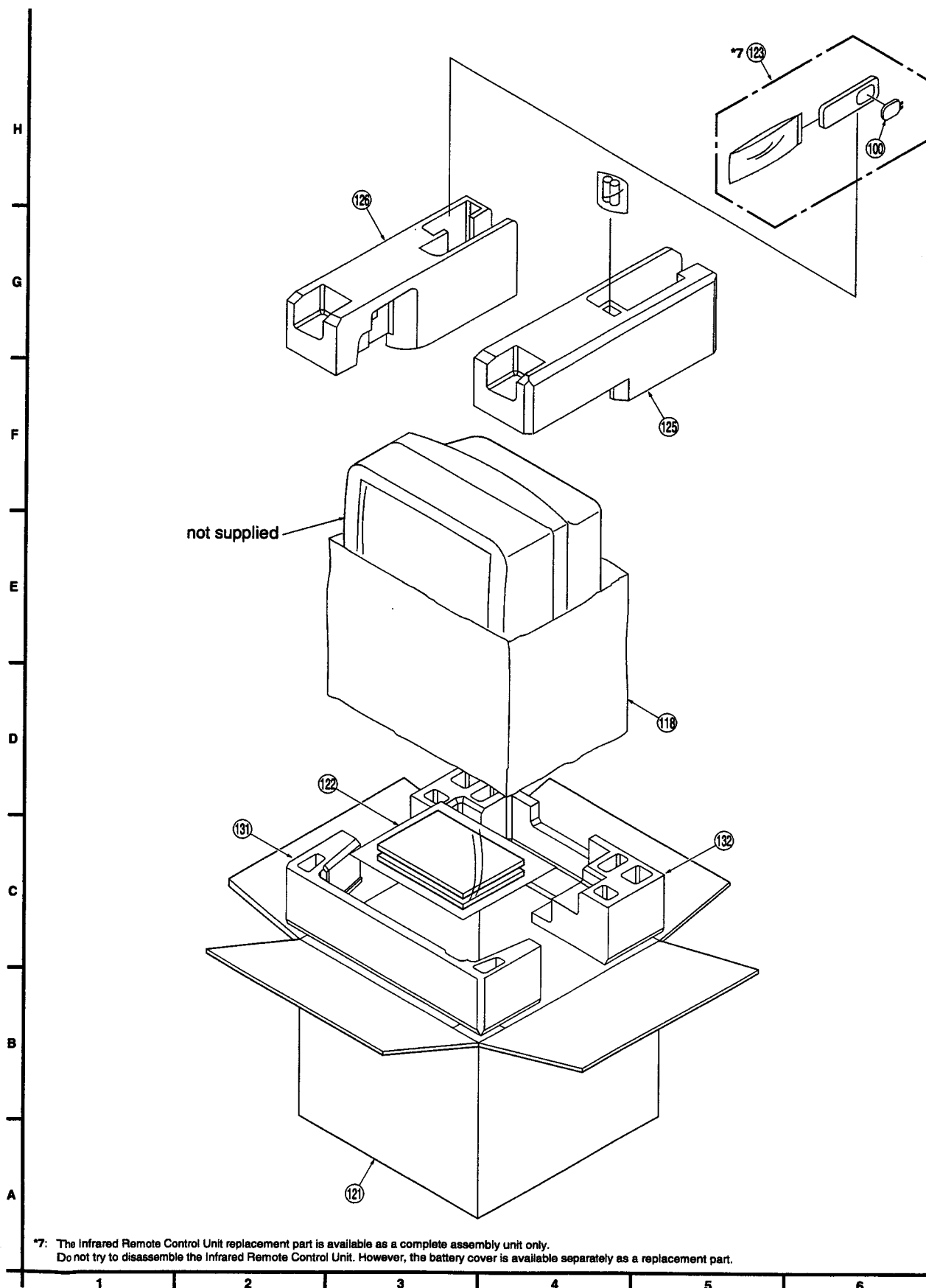
5 CHASSIS FRAME SECTION (2)

IMPORTANT SAFETY NOTICE

COMPONENTS IDENTIFIED BY THE SIGN  HAVE SPECIAL CHARACTERISTICS IMPORTANT FOR SAFETY. WHEN REPLACING ANY OF THESE COMPONENTS, USE ONLY THE SPECIFIED PARTS.



⑥ PACKING PARTS AND ACCESSORIES SECTION



REPLACEMENT PARTS LISTS

BEFORE REPLACING PARTS, READ THE FOLLOWING:

REPLACEMENT NOTES

General Notes

1. Use only original replacement parts:
To maintain original function and reliability of repaired units, use only original replacement parts which are listed with their part numbers in the parts list.
2. **IMPORTANT SAFETY NOTICE**
Components identified by the sign Δ have special characteristics important for safety. When replacing any of these components, use only the specified parts.
3. **SPECIAL NOTE**
All integrated circuits and many other semiconductor devices are electrostatically sensitive and therefore require the special handling techniques described under the "ELECTROSTATICALLY SENSITIVE (ES) DEVICES" section of this service manual.
4. Parts with no Ref. No. in "EXPLODED VIEW" are not supplied. And some Ref. No. will be skipped. Be sure to make your orders of replacement parts according to the parts list.
5. Parts different in shape or size may be used. However, only interchangeable parts will be supplied as service replacement parts.
6. Parts with mark "MKA" in Remarks column are supplied from MKA factory.

Mechanical Replacement Notes

1. Section No. of parts shown in Exploded Views are indicated in the Remarks column.
2. Abbreviation
RTL: Retention Time Limited
This indicates that the retention time is limited for this item. After the discontinuation of this item in production, it will no longer be available.
3. Capstan Rotor Unit, Capstan Holder Unit, and Stopper are supplied as Capstan Rotor Kit (Ref. No. 51) only.
4. Capstan Stator Unit, Capstan Rotor Unit, Capstan Holder Unit, and Stopper are supplied as a Capstan Stator Kit (Ref. No. 52) only. However, IC2501 (AN3845SC) is available separately as a replacement part. When installing the IC2501 or Capstan Stator unit, be sure to apply Silicon Grease (VFK1301). Refer to "Capstan Stator Unit" of "DISASSEMBLY/ASSEMBLY PROCEDURES OF MECHANISM" section.
5. Main Cam Gear is supplied as a Main Cam Gear Kit (Ref. No. 8) only. Main Cam Gear Kit consists of a Main Cam Gear and a Main Cam Push Nut. However, Main Cam Push Nut is available separately as a replacement part.
6. Since the UHF/VHF TUNER/TV DEMODULATOR UNIT (Ref. No. E21) has already been pre-adjusted at the factory, do not try to adjust the UHF/VHF TUNER/TV DEMODULATOR UNIT. The UHF/VHF TUNER/TV DEMODULATOR UNIT replacement part is available as a complete assembly unit only.
7. The Infrared Remote Control Unit (Ref. No. 123) replacement part is available as a complete assembly unit only. Do not try to disassemble the Infrared Remote Control Unit. However, the battery cover is available separately as a replacement part.
8. Cut Washers (Ref. No. 417 and 441) are not reusable. If removed, install a new one.
9. Main Cam Push Nut (Ref. No. 414) is not reusable. If removed, install a new one.

Electrical Replacement Notes

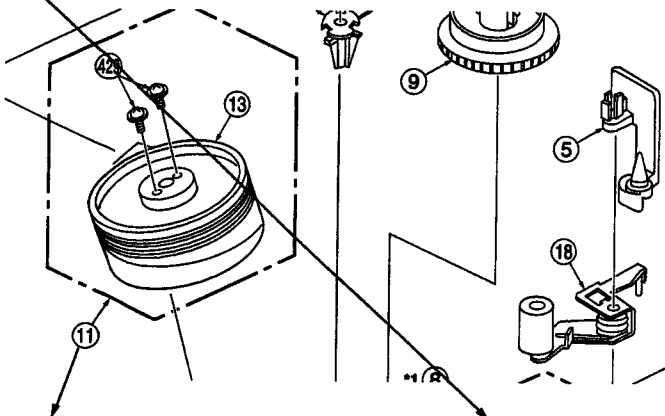
1. Item numbers with capital letter E (Example: E1, E2,...) in the Ref. No. column are shown in the exploded views. The E item numbers are also printed on the same page at the top of the column.
2. The parts with "■" mark are supplied individually or as a unit. The parts with "▲" mark are supplied individually or as a unit, and are included in "■" parts listed directly above in the parts list.
3. Unless otherwise specified;
All resistors are in ohms, 1/4W, +/-5%, carbon, K = 1,000 ohm, M = 1,000 kohm.
All capacitors are in microfarads, P = micromicrofarad, +/-10%.
All coils are in microhenries, M = 1,000 microhenry, +/-10%.
4. Abbreviation
RTL: Retention Time Limited
This indicates that the retention time is limited for this item. After the discontinuation of this item in production, it will no longer be available.
NR: Non Repairable Board Ass'y
MGF CHIP: Metal Glaze Film Chip
C CHIP: Ceramic Chip
COMPLX CMP: Complex Component
W FLMPRF: Wirewound Flameproof
C.B.A.: Circuit Board Assembly
P.C.B.: Printed Circuit Board
E.S.D.: Electrostatically Sensitive Devices
5. **SERVICE OF CHIP PARTS**
When servicing chip parts, please use a soldering iron of less than 30 watts. Refer to "IC, TRANSISTOR AND CHIP PART INFORMATION" page.
6. The parts with "●" are 0 ohm resistor. When replacing, a wire can be substituted for a 0 ohm resistor.
7. IC6001 replacement note:
When replacing IC6001, be sure to discharge C6001 (Capacitor) with a 1K ohm (Resistor) over 3 seconds.
8. IC6004 replacement note:
When replacing IC6004, be sure to write the initial data with a remote control.

MECHANICAL REPLACEMENT PARTS LIST

<The complete Exploded Views are shown in this manual.>

EXPLODED VIEWS

① MECHANISM (TOP) SECTION



Ref. No.	Part No.	Part Name	Remarks
MECHANISM PARTS ON CHASSIS			
		(Section No.)	
1	VBSS0033	FULL ERASE HEAD	1
2	VXKS0067	MOTOR BLOCK ASS'Y	1
	OR VXKS0076		
3	VDBS0349	TENSION ARM BOSS	1
4	VDBS0351	S BRAKE ARM BOSS	1
5	VMDS0971	OPENER PIECE	1
6	VDGS0428	NORM WHEEL GEAR	1
7	VDGS0429	INTERMEDIATE GEAR	1
8	VVGS0008	MAIN CAM GEAR KIT	1
9	VDRS0056	S REEL TABLE	1
10	VDRS0057	T REEL TABLE	1
11	VEGS0408	CYLINDER UNIT	1
12	VEHS0569	AUDIO CONTROL/ERASE HEAD UNIT	1
13	VEHS0567	UPPER CYLINDER UNIT	1
14	VJSS0882	CONNECTOR 8P	1
15	VJWS6LB100LL	COMMJ CABLE W/OUT PLUG	1
16	VXDS0198	LOADING POST BASE-S UNIT	1
17	VXDS0195	LOADING POST BASE-T UNIT	1
18	VXLS1078	PINCH ARM UNIT	1
19	VMLS0978	MAIN LEVER DRIVE ARM	1
20	VXLS1063	PS ARM UNIT	1
21	VMLS0976	DRIVE RACK ARM	1
22	VMLS0972	CHANGING LEVER A	1
23	VMLS0977	MAIN LEVER	1
24	VXLS1072	LOADING RACK UNIT	1
25	VXLS1061	S BRAKE ARM UNIT	1
26	VMLS0982	S SPRING ARM	1
27	VXLS1062	T BRAKE UNIT	1
28	VBMS1150	T BRAKE SPRING	1
29	VXLS1074	TENSION ARM UNIT	1
30	VBMS1164	TENSION SPRING	1
38	LEB62001A	CASSETTE DOOR SPRING	4 MKA
41	VXPS0379	CENTER CLUTCH UNIT	2
42	VBMS1151	CHANGING GEAR SPRING	2
43	VDGS0425	CHANGING GEAR	2
44	VXLS1053	IDLER ARM UNIT	2
45	VMDS0985	PCB HOLDER	2
46	VMDS0982	MAIN LEVER GUIDE	2
47	VMLS0973	CHANGING LEVER B	2
48	LXQVB01279	PICTURE TUBE UNIT	4 MKA
49	VXLS1054	S LOADING ARM UNIT	2
50	VXLS1056	T LOADING ARM UNIT	2
51	VXPS0382K2	CAPSTAN ROTOR KIT	2
52	VEKS0316K2	CAPSTAN STATOR KIT	2
53	VBS0040	FG HEAD	2
54	VDVS0087	CAPSTAN BELT SQUARE, ELASTOMER 2MM	2
55	VMA2135	SUB ROTOR	2

Ref. No.	Part No.	Part Name	Remarks
57	VXBS0061	GROUNDING PLATE UNIT	2
58	VXLS1070	SS BRAKE ARM UNIT	2
59	VBMS1155	SS BRAKE SPRING	2
61	VXYS1337	CASSETTE UP ASS'Y	3 MKA
62	VMA2131	TOP PLATE	3
63	VBMS1159	GROUNDING SPRING	3
64	VMDS0990	SIDE PLATE L	3
65	VMDS0974	SIDE PLATE R	3
66	VMDS0979	SENSOR COVER	3
67	LSML0092	OPENER LEVER	3 MKA
68	VXLS1064	DRIVE RACK UNIT	3
69	VXAS4404	HOLDER UNIT	3
70	VXLS1065	WIPER ARM UNIT	3
71	LXQKV01279	FRONT CABINET ASS'Y	4 MKA
72	LXQKF01279	VHS CASSETTE DOOR-LID UNIT	4 MKA
73	LXQKV01279	REAR COVER UNIT	4 MKA
84	LSGU0106	VHS OPERATION BUTTON	4 MKA
90	TBM173052	BADGE, ABS RESIN	4
92	LASSF528RA	SPEAKER	4 MKA
96	TMM7464-1	CLAMPER	5
97	VMXS0869	DOUBLE LOCKING SPACER	5 MKA
100	VKFS2235	BATTERY COVER	6
106	TKK778205-3	HANDLE	4 MKA
118	LPE64005A	BAG, POLYETHYLENE	6 MKA
121	LSPG0666	PACKING CASE, PAPER	6 MKA
122	VQFS3592	FAN BAG	6
123	VQS1613	INFRARED REMOTE CONTROL UNIT	6 MKA
125	LSPM0125	TOP CUSHION RIGHT, STYROFOAM	6 MKA
126	LSPM0124	TOP CUSHION LEFT, STYROFOAM	6 MKA
131	LSPM0126	BOTTOM CUSHION FRONT, STYROFOAM	6 MKA
132	LSPM0127	BOTTOM CUSHION REAR, STYROFOAM	6 MKA
153	TMM77412	CLAMPER	5 MKA
174	TUX77115	HEAT SINK SUPPORT ANGLE	5 MKA
178	VMF0165	SPACER	5
185	LU61015A	SHIELD PLATE, STEEL	5 MKA
200	LSGL0313	PANEL LIGHT	4 MKA
201	LSGU0107	DVD OPERATION BUTTON	4 MKA
202	LXQKF02279	DVD CASSETTE DOOR-LID UNIT	4 MKA
203	LSMB0170	DVD CASSETTE DOOR SPRING	4 MKA
204	LSMA0342	MOUNT PLATE L, STEEL	5
205	LSMA0343	MOUNT PLATE R, STEEL	5
206	VEKS5698	SPEAKER CORD L W/PLUG	4 MKA
207	VEKS5697	SPEAKER CORD R W/PLUG	4 MKA
208	TMM77708	CUSHION, RUBBER	4 MKA
209	VMF0213	SHEET, NYLON+RAYON	4 MKA
215	LSQL0837	CAUTION LABEL	4 MKA
217	LSGF0015	BARRIER	5
218	LSGF0016	BARRIER	5
219	LSGF0017	BARRIER	5
232	LSPM0215	DVD WIRE CLAMP	5 MKA
233	LSSC0288	DVD TOP SHIELD PLATE, STEEL	5
234	LSZU0001	ALUMINUM FOIL	5 MKA
236	LSXA0289	SHIELD PLATE UNIT	5
242	VXYS1340	DVD ASS'Y	5 RTL MKA
243	LSZU0008	ALUMINUM FOIL	5 MKA
244	TUX77809	CLAMPER	5 MKA
245	VEKS5724	GROUNDING WIRE	5 MKA

ELECTRICAL REPLACEMENT PARTS LIST

(E1, E2, E4, E6, E7, E9, E16, E17, E93, E111)

Ref. No.	Part No.	Part Name	Remarks
PRINTED CIRCUIT BOARD ASSEMBLY			
E1	VEPS3077A	MAIN C.B.A.	■ E.S.D. RTL MKA
E2	VEPS4029A	Hi-Fi AUDIO C.B.A.	■ E.S.D. RTL MKA
E4	VEPS8056A	OPERATION C.B.A.	■ RTL MKA
E9	VEPS0A68A	AUDIO/VIDEO JACK C.B.A.	■ RTL MKA
E6	VEPS5019Z	Hi-Fi AUDIO/VIDEO HEAD AMP C.B.A.	■ RTL MKA
E7	VEPS0A25A	JUNCTION C.B.A.	■ RTL
E93	LRP63012A	DVD SUB C.B.A.	■ E.S.D. RTL MKA
E111	LRP63016A	DIGITAL AUDIO C.B.A.	▲ RTL
E16	LRP61011A	TV MAIN C.B.A.	■ RTL MKA
E17	LRP63013A	CRT C.B.A.	■ RTL MKA
MAIN C.B.A.			
INTEGRATED CIRCUITS			
IC1001	PS2501-1-X	IC, LINEAR ERROR V. DET	△
	OR 0N3131-R.KT	IC, LINEAR ERROR V. DET	△
	OR 0N3131-S.KT	IC, LINEAR ERROR V. DET	△
IC3001	AN3479FBP	IC, LINEAR VIDEO/AUDIO PROCESS	
IC3201	MN3885S	IC, CCD 1H DELAY	E.S.D.
IC3301	NJM2246M	IC, BIPOLAR LINEAR SW	E.S.D.
IC5301	AN5367FB	IC, LINEAR Y/C SIGNAL PROCESS	MKA
IC5303	NJM2235M	IC, BIPOLAR LINEAR VIDEO INPUT SW	E.S.D.
IC6001	MN102L35GAZ	IC, 16BIT MICROCONTROLLER OSD/CCV/DATA SLICER/TIMER	E.S.D. NOTE 1 MKA
IC6004	AT24C01A10PI	IC, 1K EEPROM MEMORY	NOTE 2 MKA
	OR M24C01-BW6	IC, 1K EEPROM MEMORY	NOTE 2 MKA
	OR ST24C01FB6	IC, 1K EEPROM MEMORY	NOTE 2 MKA
	OR 24LC01B/P	IC, 1K EEPROM MEMORY	NOTE 2 MKA
IC6201	MN101D02DDA	IC, 16BIT MICROCONTROLLER SYSTEM CONTROL/SERVO	E.S.D. MKA
IC6202	CNA1801N	REEL SENSOR UNIT	
	OR SG-254	REEL SENSOR UNIT	
	OR SG-254A	REEL SENSOR UNIT	
IC6203	CNA1801N	REEL SENSOR UNIT	
	OR SG-254	REEL SENSOR UNIT	
	OR SG-254A	REEL SENSOR UNIT	
TRANSISTORS			
Q1001	2SC4533LP.KT		△
	OR 2SC5130LF608		△
Q1002	2SD1458		
	OR 2SD2259		
Q1003	2SC4081T106R	CHIP	
	OR 2SD1819A(R,S)	CHIP	
Q1004	2SA1037K146R	CHIP	
	OR 2SB709A(R,S)	CHIP	
Q1005	2SA1576A106R	CHIP	
	OR 2SB1218AR5	CHIP	
Q1051	2SC3852		
	OR 2SD2375(P,Q)		
	OR 2SD2396(K)		
Q1052	2SC2412K1	CHIP	
	OR 2SD601(R,S)	CHIP	
Q1053	2SD097TV2R	CHIP	
	OR 2SD235800A	CHIP	
Q3001	2SA1037K146R	CHIP	
	OR 2SB709A	CHIP	
Q3002	2SC2412K1	CHIP	
	OR 2SD601A	CHIP	
Q4001	2SA1037K146R	CHIP	
	OR 2SB709A	CHIP	
Q4002	2SD601(R,S)	CHIP	
Q4003	2SD601(R,S)	CHIP	
Q4101	2SC2412K1	CHIP	
	OR 2SD601A	CHIP	

NOTE 1: When replacing IC6001, be sure to discharge C6001 (Capacitor) with a 1K ohm (Resistor) over 3 seconds.

Ref. No.	Part No.	Part Name	Remarks
Q4173	DTC144EK	CHIP	
	OR UN2213	CHIP	
Q5301	2SC2412K1	CHIP	
	OR 2SD601A	CHIP	
Q5302	2SC2412K1	CHIP	
	OR 2SD601A	CHIP	
Q5351	DTC124EK	CHIP	
	OR UN2212	CHIP	
Q5352	2SC2412K1	CHIP	
	OR 2SD601A	CHIP	
Q5353	2SC2412K1	CHIP	
	OR 2SD601A	CHIP	
Q5381	2SC2412K1	CHIP	
	OR 2SD601A	CHIP	
Q5382	2SC2412K1	CHIP	
	OR 2SD601A	CHIP	
Q5383	2SC2412K1	CHIP	
	OR 2SD601A	CHIP	
Q5901	2SD1858(R)		MKA
	OR 2SD2259		
Q6001	2SA1037K146R	CHIP	
	OR 2SA1576A106R	CHIP	
	OR 2SB1218AR5	CHIP	
	OR 2SB709A	CHIP	
Q6004	2SB710A(T)	CHIP	
Q6005	2SC2412K1	CHIP	
	OR 2SC4081T106R	CHIP	
	OR 2SD1819A(R,S)	CHIP	
	OR 2SD601A	CHIP	
Q6006	DTA143EK	CHIP	
	OR UN211L	CHIP	
	OR UN511L	CHIP	
Q6007	2SC2412K1	CHIP	
	OR 2SC4081T106R	CHIP	
	OR 2SD1819A(R,S)	CHIP	
	OR 2SD601A	CHIP	
Q6013	2SA1037K146R	CHIP	
	OR 2SA1576A106R	CHIP	
	OR 2SB1218AR5	CHIP	
	OR 2SB709A	CHIP	
Q6014	DTA124EK	CHIP	
	OR DTA124EU	CHIP	
	OR UN2112	CHIP	
	OR UN5112	CHIP	
Q6015	HN1C01F(GR)	COMPLX CMP SI NPN CHIP	
	OR IMK1T108	COMPLX CMP SI NPN CHIP	
	OR XM4501	COMPLX CMP SI NPN CHIP	
Q6016	2SC2412K1	CHIP	
	OR 2SC4081T106R	CHIP	
	OR 2SD1819A(R,S)	CHIP	
	OR 2SD601A	CHIP	
Q6017	2SD601A	CHIP	
	OR 2SC2412K146R	CHIP	
Q6201	2SA1037K146R	CHIP	
	OR 2SA1576A106R	CHIP	
	OR 2SB1218AR5	CHIP	
	OR 2SB709A	CHIP	
Q6202	2SC2412K1	CHIP	
	OR 2SC4081T106R	CHIP	
	OR 2SD1819A(R,S)	CHIP	
	OR 2SD601A	CHIP	
Q6203	2SA1037K146R	CHIP	
	OR 2SA1576A106R	CHIP	
	OR 2SB1218AR5	CHIP	
	OR 2SB709A	CHIP	
Q6204	VEKS5522	PHOTO SENSOR UNIT	
Q6205	VEKS5522	PHOTO SENSOR UNIT	
Q6211	DTC114EK	CHIP	
	OR DTC114EU	CHIP	
	OR UN2211	CHIP	
	OR UN5211	CHIP	
Q6212	DTC114EK	CHIP	
	OR DTC114EU	CHIP	
	OR UN2211	CHIP	
	OR UN5211	CHIP	

NOTE 2: When replacing IC6004, be sure to write the initial data with a remote control.

Ref. No.	Part No.	Part Name	Remarks
Q6213	DTC114EK	CHIP	
	OR DTC114EU	CHIP	
	OR UN2211	CHIP	
	OR UN5211	CHIP	
Q6214	DTC114EK	CHIP	
	OR DTC114EU	CHIP	
	OR UN2211	CHIP	
	OR UN5211	CHIP	
		DIODES	
D1001	S1WBA40		△
	OR S1WBA60		△
D1002	ERA18-04V3		
D1003	ERA18-04V3		
D1005	ERA18-04V3		
D1006	ERC30-01L3		
	OR RU3YXLF1		
D1007	ERA18-04V3		
D1008	ER881-004V1		
	OR RK14V1		
D1011	MA4051N-TAKT	ZENER	5.1V
D1012	MA858		
	OR 1SS135T-77		
D1013	MA165		
	OR WG713A		
	OR 1SS119		
	OR 1SS133T		
D1015	MA7180	ZENER	18V △
	OR MA7180A-TR	ZENER	18V △
	OR MA7180B-TR	ZENER	18V △
D1016	MA165		
	OR WG713A		
	OR 1SS119		
	OR 1SS133T		
D1051	MA4100N	ZENER	10V
	OR RD10J5AB3	ZENER	10V
D1052	MA165		
	OR WG713A		
	OR 1SS119		
	OR 1SS133T		
D1053	MA165		
	OR WG713A		
	OR 1SS119		
	OR 1SS133T		
D1056	ERA15-01V3		
	OR ERA15-01V5		
D5304	MA110	CHIP	
	OR MA111	CHIP	
	OR 1SS355TE-17	CHIP	
D5351	MA165		
	OR WG713A		
	OR 1SS119		
	OR 1SS133T		
D5352	MA165		
	OR WG713A		
	OR 1SS119		
	OR 1SS133T		
D5501	MA4062-L	ZENER	6.2V
D6001	MA165		
	OR WG713A		
	OR 1SS119		
	OR 1SS133T		
D6002	MA165		
	OR WG713A		
	OR 1SS119		
	OR 1SS133T		
D6201	VEK55521	SENSOR LED UNIT	
D6351	SLP413C81HAB	LED ORANGE	MKA
D6352	SLP313C81HAB	LED GREEN	
D6353	SLP913C81HAB	LED RED	
D6354	SLP913C81HAB	LED RED	
		RESISTORS	
R1003	VRESE2TJ334		1/2W 330K
R1004	ERG25JW333E	METAL OXIDE	2W 33K
R1005	ERG15JW560E	METAL OXIDE	1W 56

Ref. No.	Part No.	Part Name	Remarks
R1006	ERJ6GEYJ222V	MGF CHIP	1/10W 2.2K
R1007	ERDS2TJ101		100
R1008	ERDS2TJ392		3.9K
R1010	ERD25FJ100P		10 △
	OR ERD25FYJ100T		10 △
	OR VRESS4FJ100E		10 △
R1011	ERD25FJ100P		10 △
	OR ERD25FYJ100T		10 △
	OR VRESS4FJ100E		10 △
R1014	ERJ6GEYJ221V	MGF CHIP	1/10W 220
R1015	ERJ6GEYJ221V	MGF CHIP	1/10W 220
R1016	ERJ8GEYJ562V	MGF CHIP	1/8W 5.6K
R1017	ERJ6GEYJ103V	MGF CHIP	1/10W 10K
R1018	ERJ6GEYJ183V	MGF CHIP	1/10W 18K
R1019	ERJ6GEYJ392V	MGF CHIP	1/10W 3.9K
R1020	ERJ6GEYJ682V	MGF CHIP	1/10W 6.8K
R1022	ERJ6GEYJ221V	MGF CHIP	1/10W 220
R1025	VRESE2TJ150		1/2W 15
R1051	ERJ6GEYJ472V	MGF CHIP	1/10W 4.7K
R1052	ERDS2TJ153		15K
R1053	ERDS2TJ153		15K
R1057	ERDS2TJ331		330
R1058	ERDS2TJ104		100K
R1068	ERDS2TJ102		1K
R3001	ERDS2TJ221		220
R3006	ERDS2TJ221		220
R3010	ERJ6GEYJ103V	MGF CHIP	1/10W 10K
R3013	ERJ6GEYJ221V	MGF CHIP	1/10W 220
R3016	ERJ6GEYJ121V	MGF CHIP	1/10W 120
R3017	ERJ6GEYJ331V	MGF CHIP	1/10W 330
R3024	ERJ6GEYJ331V	MGF CHIP	1/10W 330
R3025	ERJ6GEYJ125V	MGF CHIP	1/10W 1.2M
R3026	ERJ6GEYJ474V	MGF CHIP	1/10W 470K
R3028	ERJ6GEYJ272V	MGF CHIP	1/10W 2.7K
R3029	ERJ6GEYJ151V	MGF CHIP	1/10W 150
R3032	ERJ6GEYJ122V	MGF CHIP	1/10W 1.2K
R3034	ERJ6GEYJ102V	MGF CHIP	1/10W 1K
R3035	ERJ6GEYJ562V	MGF CHIP	1/10W 5.6K
R3036	ERJ6GEYJ102V	MGF CHIP	+2K 1/10W 1K
R3037	ERJ6GEYJ102V	MGF CHIP	+2K 1/10W 1K
R3038	ERJ6GEYJ222V	MGF CHIP	1/10W 2.2K
R3042	ERJ6GEY0R00V	MGF CHIP	1/10W 0 ●
R3043	ERJ6GEYJ562V	MGF CHIP	+2K 1/10W 5.6K
R3044	ERJ6GEYJ332V	MGF CHIP	+2K 1/10W 3.3K
R3077	ERJ6GEYJ101V	MGF CHIP	1/10W 100
R3081	ERJ6GEYJ103V	MGF CHIP	1/10W 10K
R3082	ERJ6GEYJ223V	MGF CHIP	1/10W 22K
R3083	ERJ6GEYJ271V	MGF CHIP	1/10W 270
R3084	ERJ6GEYJ222V	MGF CHIP	1/10W 2.2K
R3085	ERJ6GEYJ181V	MGF CHIP	1/10W 180
R3301	ERJ6GEYJ274V	MGF CHIP	1/10W 270K
R3302	ERJ6GEYJ101V	MGF CHIP	1/10W 100
R3303	ERJ6GEYJ331V	MGF CHIP	1/10W 330
R3304	ERJ6GEYJ101V	MGF CHIP	1/10W 100
R3305	ERJ6GEYJ274V	MGF CHIP	1/10W 270K
R3306	ERJ6GEYJ102V	MGF CHIP	1/10W 1K
R4001	ERJ6GEYJ103V	MGF CHIP	1/10W 10K
R4002	ERJ6GEYJ334V	MGF CHIP	1/10W 330K
R4003	ERJ6GEYJ221V	MGF CHIP	1/10W 220
R4004	ERJ6GEYJ333V	MGF CHIP	1/10W 33K
R4005	ERJ6GEYJ225V	MGF CHIP	1/10W 2.2M
R4006	ERJ6GEYJ681V	MGF CHIP	1/10W 680
R4007	ERJ6GEYJ821V	MGF CHIP	1/10W 820
R4008	ERJ6GEYJ273V	MGF CHIP	1/10W 27K
R4009	ERJ6GEYJ473V	MGF CHIP	1/10W 47K
R4010	ERJ6GEYJ103V	MGF CHIP	1/10W 10K
R4011	ERJ6GEYJ682V	MGF CHIP	1/10W 6.8K
R4012	ERJ6GEYJ682V	MGF CHIP	1/10W 6.8K
R4013	ERJ6GEY0R00V	MGF CHIP	1/10W 0 ●
R4014	ERJ6GEYJ472V	MGF CHIP	1/10W 4.7K
R4015	ERJ6GEYJ222V	MGF CHIP	1/10W 2.2K
R4031	ERJ6GEYJ333V	MGF CHIP	1/10W 33K
R4032	ERJ6GEYJ223V	MGF CHIP	1/10W 22K
R4101	ERJ6GEYJ563V	MGF CHIP	1/10W 56K
R4102	ERJ6GEYJ334V	MGF CHIP	1/10W 330K
R4103	ERJ6GEYJ153V	MGF CHIP	1/10W 15K
R4171	ERJ6GEYJ153V	MGF CHIP	1/10W 15K
R4174	ERJ6GEYJ103V	MGF CHIP	1/10W 10K

Ref. No.	Part No.	Part Name	Remarks
R5301	ERJ6GEYJ221V	MGF CHIP 1/10W 220	
R5302	ERJ6GEYJ223V	MGF CHIP 1/10W 22K	
R5303	ERJ6GEYJ472V	MGF CHIP 1/10W 4.7K	
R5304	ERJ6GEYJ393V	MGF CHIP 1/10W 39K	
R5305	ERJ6GEYJ224V	MGF CHIP 1/10W 220K	
R5306	ERJ6GEYJ223V	MGF CHIP 1/10W 22K	
R5307	ERJ6GEY0R00V	MGF CHIP 1/10W 0	
R5308	ERJ6GEYJ393V	MGF CHIP 1/10W 39K	
R5309	ERJ6GEYJ184V	MGF CHIP 1/10W 180K	
R5311	ERJ6GEYJ331V	MGF CHIP 1/10W 330	
R5312	ERJ6GEYJ331V	MGF CHIP 1/10W 330	
R5313	ERJ6GEYJ331V	MGF CHIP 1/10W 330	
R5314	ERJ6GEYJ272V	MGF CHIP 1/10W 2.7K	
R5315	ERJ6GEYJ272V	MGF CHIP 1/10W 2.7K	
R5316	ERJ6GEYJ272V	MGF CHIP 1/10W 2.7K	
R5317	ERJ6GEYJ101V	MGF CHIP 1/10W 100	
R5318	ERJ6GEYJ272V	MGF CHIP 1/10W 2.7K	
R5322	ERJ6GEY0R00V	MGF CHIP 1/10W 0	
R5323	ERDS2TJ472	4.7K	
R5324	ERJ6GEYJ101V	MGF CHIP 1/10W 100	
R5325	ERJ6GEYJ101V	MGF CHIP 1/10W 100	
R5330	ERJ6GEYJ101V	MGF CHIP 1/10W 100	
R5351	ERJ6GEYJ562V	MGF CHIP 1/10W 5.6K	
R5352	ERJ6GEYJ123V	MGF CHIP 1/10W 12K	
R5353	ERJ6GEYJ331V	MGF CHIP 1/10W 330	
R5354	ERJ6GEYJ123V	MGF CHIP 1/10W 12K	
R5358	ERJ6GEYJ562V	MGF CHIP 1/10W 5.6K	
R5359	ERJ6GEYJ101V	MGF CHIP 1/10W 100	
R5381	ERJ6GEYJ182V	MGF CHIP 1/10W 1.8K	
R5382	ERJ6GEYJ182V	MGF CHIP 1/10W 1.8K	
R5383	ERJ6GEYJ223V	MGF CHIP 1/10W 22K	
R5384	ERJ6GEYJ273V	MGF CHIP 1/10W 27K	
R5385	ERJ6GEYJ472V	MGF CHIP 1/10W 4.7K	
R5386	ERJ6GEYJ220V	MGF CHIP 1/10W 22	
R5387	ERJ6GEYJ332V	MGF CHIP 1/10W 3.3K	
R5388	ERJ6GEY0R00V	MGF CHIP 1/10W 0	
R5390	ERJ6GEYJ220V	MGF CHIP 1/10W 22	
R5391	ERJ6GEYJ332V	MGF CHIP 1/10W 3.3K	
R5401	ERJ6GEYJ561V	MGF CHIP 1/10W 560	
R5402	ERJ6GEYJ394V	MGF CHIP 1/10W 390K	
R5403	ERJ6GEYJ221V	MGF CHIP 1/10W 220	
R5404	ERJ6GEYJ334V	MGF CHIP 1/10W 330K	
R5405	ERJ6GEYJ822V	MGF CHIP 1/10W 8.2K	
R5406	ERJ6GEYJ101V	MGF CHIP 1/10W 100	
R5407	ERJ6GEYJ101V	MGF CHIP 1/10W 100	
R5501	ERJ6GEYJ271V	MGF CHIP 1/10W 270	
R5502	ERJ6GEYJ394V	MGF CHIP 1/10W 390K	
R5503	ERDS2TJ471	470	
R5504	ERJ6GEYJ101V	MGF CHIP 1/10W 100	
R5505	ERJ6ENF3241V	MGF CHIP +-1% 1/10W 3.24K	MKA
R5508	ERJ6GEYJ561V	MGF CHIP 1/10W 560	
R5510	ERJ6GEYJ101V	MGF CHIP 1/10W 100	
R5511	ERJ6GEYJ222V	MGF CHIP 1/10W 2.2K	
R5512	ERJ6GEYJ151V	MGF CHIP 1/10W 150	
R5513	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R5515	ERJ6GEYJ272V	MGF CHIP 1/10W 2.7K	
R5604	ERJ6GEYJ332V	MGF CHIP 1/10W 3.3K	
R5615	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R5901	ERQ12AJ270P	FUSE 1/2W 27	MKA
R5902	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R5932	ERJ6GEYJ101V	MGF CHIP 1/10W 100	
R5933	ERJ6GEYJ101V	MGF CHIP 1/10W 100	
R6001	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R6002	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6004	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R6005	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R6006	ERJ6GEYJ391V	MGF CHIP 1/10W 390	
R6007	ERJ6GEYJ475V	MGF CHIP 1/10W 4.7M	
R6008	ERJ6GEYJ182V	MGF CHIP 1/10W 1.8K	
R6009	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6010	ERDS2TJ560	56	
R6011	ERJ6GEYJ472V	MGF CHIP 1/10W 4.7K	
R6012	ERJ6GEYJ472V	MGF CHIP 1/10W 4.7K	
R6013	ERJ6GEYJ221V	MGF CHIP 1/10W 220	
R6014	ERJ6GEYJ221V	MGF CHIP 1/10W 220	
R6015	ERJ6GEYJ562V	MGF CHIP 1/10W 5.6K	
R6016	ERJ6GEYJ562V	MGF CHIP 1/10W 5.6K	
R6017	ERJ6GEYJ562V	MGF CHIP 1/10W 5.6K	

Ref. No.	Part No.	Part Name	Remarks
R6018	ERJ6GEYJ562V	MGF CHIP 1/10W 5.6K	
R6019	ERJ6GEYJ562V	MGF CHIP 1/10W 5.6K	
R6020	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R6021	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R6022	ERJ6GEYJ221V	MGF CHIP 1/10W 220	
R6026	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R6027	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R6028	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R6030	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R6032	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R6034	ERJ6GEYJ563V	MGF CHIP 1/10W 56K	
R6035	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R6036	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6042	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6043	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6044	ERJ6GEYJ472V	MGF CHIP 1/10W 4.7K	
R6045	ERJ6GEYJ472V	MGF CHIP 1/10W 4.7K	
R6046	ERJ6GEYJ222V	MGF CHIP 1/10W 2.2K	
R6047	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6054	ERJ6GEYJ221V	MGF CHIP 1/10W 220	
R6055	ERJ6GEYJ392V	MGF CHIP 1/10W 3.9K	
R6057	ERJ6GEYJ152V	MGF CHIP 1/10W 1.5K	
R6059	ERJ6GEYJ223V	MGF CHIP 1/10W 22K	
R6061	ERJ6GEYJ223V	MGF CHIP 1/10W 22K	
R6063	ERJ6GEYJ223V	MGF CHIP 1/10W 22K	
R6065	ERJ6GEYJ563V	MGF CHIP 1/10W 56K	
R6066	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R6067	ERJ6GEYJ472V	MGF CHIP 1/10W 4.7K	
R6070	ERJ6GEYJ221V	MGF CHIP 1/10W 220	
R6071	ERJ6GEYJ222V	MGF CHIP 1/10W 2.2K	
R6074	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6075	ERJ6GEYJ472V	MGF CHIP 1/10W 4.7K	
R6076	ERJ6GEYJ201V	MGF CHIP 1/10W 200	
R6077	ERJ6GEYJ201V	MGF CHIP 1/10W 200	
R6078	ERJ6GEYJ201V	MGF CHIP 1/10W 200	
R6079	ERDS2TJ102	1K	
R6080	ERJ6GEYJ122V	MGF CHIP 1/10W 1.2K	
R6081	ERJ6GEYJ122V	MGF CHIP 1/10W 1.2K	
R6082	ERJ6GEYJ392V	MGF CHIP 1/10W 3.9K	
R6083	ERJ6GEYJ221V	MGF CHIP 1/10W 220	
R6084	ERJ6GEYJ682V	MGF CHIP 1/10W 6.8K	
R6085	ERJ6GEYJ151V	MGF CHIP 1/10W 150	
R6086	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R6087	ERJ6GEYJ470V	MGF CHIP 1/10W 47	
R6090	ERJ6GEYJ273V	MGF CHIP 1/10W 27K	
R6091	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6092	ERJ6GEYJ470V	MGF CHIP 1/10W 47	
R6093	ERJ6GEYJ221V	MGF CHIP 1/10W 220	
R6094	ERJ6GEYJ221V	MGF CHIP 1/10W 220	
R6102	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R6103	ERJ6GEYJ182V	MGF CHIP 1/10W 1.8K	
R6104	ERJ6GEYJ272V	MGF CHIP 1/10W 2.7K	
R6105	ERJ6GEYJ182V	MGF CHIP 1/10W 1.8K	
R6106	ERJ6GEYJ221V	MGF CHIP 1/10W 220	
R6108	ERJ6GEYJ223V	MGF CHIP 1/10W 22K	
R6110	ERJ6GEYJ562V	MGF CHIP 1/10W 5.6K	
R6111	ERJ6GEYJ153V	MGF CHIP 1/10W 15K	
R6112	ERJ6GEYJ562V	MGF CHIP 1/10W 5.6K	
R6113	ERDS2TJ222	2.2K	
R6114	ERDS2TJ222	2.2K	
R6115	ERDS2TJ222	2.2K	
R6116	ERJ6GEYJ152V	MGF CHIP 1/10W 1.5K	
R6117	ERJ6GEYJ471V	MGF CHIP 1/10W 470	
R6201	ERDS2TJ561	560	
R6202	ERDS2TJ561	560	
R6203	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R6205	ERJ6GEYJ221V	MGF CHIP 1/10W 220	
R6208	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R6211	ERJ6GEYJ274V	MGF CHIP 1/10W 270K	
R6212	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R6213	ERJ6GEYJ184V	MGF CHIP 1/10W 180K	
R6214	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R6220	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6222	ERJ6GEYJ221V	MGF CHIP 1/10W 220	
R6223	ERJ6GEYJ272V	MGF CHIP 1/10W 2.7K	
R6226	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R6227	ERJ6GEYJ221V	MGF CHIP 1/10W 220	
R6232	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	

Ref. No.	Part No.	Part Name	Remarks
R6237	ERJ6GEYJ225V	MGF CHIP 1/10W 2.2M	
R6238	ERJ6GEYJ472V	MGF CHIP 1/10W 4.7K	
R6240	ERJ6GEYJ152V	MGF CHIP 1/10W 1.5K	
R6241	ERJ6GEYJ222V	MGF CHIP 1/10W 2.2K	
R6242	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R6244	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R6245	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R6256	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R6258	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6260	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R6261	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R6262	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R6263	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R6264	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R6265	ERJ6GEYJ153V	MGF CHIP 1/10W 15K	
R6266	ERJ6GEYJ153V	MGF CHIP 1/10W 15K	
R6267	ERJ6GEYJ224V	MGF CHIP 1/10W 220K	
R6269	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6271	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6272	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6274	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6275	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6277	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6278	ERJ6GEYJ101V	MGF CHIP 1/10W 100	
R6279	ERJ6GEYJ101V	MGF CHIP 1/10W 100	
R6280	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6281	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6282	ERJ6GEYJ101V	MGF CHIP 1/10W 100	
R6283	ERJ6GEYJ101V	MGF CHIP 1/10W 100	
R6284	ERJ6GEYJ101V	MGF CHIP 1/10W 100	
R6286	ERJ6GEYJ332V	MGF CHIP 1/10W 3.3K	
R6287	ERJ6GEYJ243V	MGF CHIP 1/10W 24K	
R6288	ERJ6GEYJ104V	MGF CHIP 1/10W 100K	
R6289	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6290	ERJ6GEYJ221V	MGF CHIP 1/10W 220	
R6291	ERJ6GEYJ221V	MGF CHIP 1/10W 220	
R6292	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6293	ERJ6GEYJ333V	MGF CHIP 1/10W 33K	
R6294	ERJ6GEYJ472V	MGF CHIP 1/10W 4.7K	
R6295	ERJ6GEYJ472V	MGF CHIP 1/10W 4.7K	
R6296	ERJ6GEYJ563V	MGF CHIP 1/10W 56K	
R6301	ERJ6GEYJ223V	MGF CHIP 1/10W 22K	
R6302	ERJ6GEYJ223V	MGF CHIP 1/10W 22K	
R6303	ERJ6GEYJ223V	MGF CHIP 1/10W 22K	
R6304	ERJ6GEYJ104V	MGF CHIP 1/10W 100K	
R6305	ERJ6GEYJ104V	MGF CHIP 1/10W 100K	
R6307	ERJ6GEYJ473V	MGF CHIP 1/10W 47K	
R6309	ERDS2TJ681	680	
R6310	ERJ6GEYJ473V	MGF CHIP 1/10W 47K	
R6311	ERDS2TJ272	2.7K	
R6312	ERJ6GEYJ223V	MGF CHIP 1/10W 22K	
R6314	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R6317	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6318	ERJ6GEYJ471V	MGF CHIP 1/10W 470	
R6351	ERJ6GEYJ182V	MGF CHIP 1/10W 1.8K	
R6352	ERJ6GEYJ392V	MGF CHIP 1/10W 3.9K	
R6354	ERJ6GEYJ182V	MGF CHIP 1/10W 1.8K	
R6355	ERJ6GEYJ392V	MGF CHIP 1/10W 3.9K	
R6356	ERJ6GEYJ123V	MGF CHIP 1/10W 12K	
R6357	ERJ6GEYJ182V	MGF CHIP 1/10W 1.8K	
R6358	ERJ6GEYJ392V	MGF CHIP 1/10W 3.9K	
R6361	ERDS2TJ471	470	
R6362	ERDS2TJ471	470	
R6363	ERDS2TJ471	470	
R6364	ERDS2TJ471	470	
CAPACITORS			
C1001	ECKATS103MF	CERAMIC +-20% 250V 0.01	△
	OR ECKNTS103MF8	CERAMIC +-20% 250V 0.01	△
	OR VCKSTQ6103ZY	CERAMIC +80%-20% 125V 0.01	△
	OR VCKSUQ0103MY	CERAMIC +-20% 125V 0.01	△
	OR VCKSU30103MY	CERAMIC +-20% 125V 0.01	△

Ref. No.	Part No.	Part Name	Remarks
C1002	ECKATS332ME8	CERAMIC +-20% 250V 3300P	△
	OR ECKNNB332ME8	CERAMIC +-20% 125V 3300P	△
	OR ECKNTS332ME8	CERAMIC +-20% 125V 3300P	△
	OR VCKSTQ6332MX	CERAMIC +-20% 125V 3300P	△
	OR VCKST3G332MX	CERAMIC +-20% 125V 3300P	△
	OR VCKSUQ0332MX	CERAMIC +-20% 125V 3300P	△
	OR VCKSU30332MX	CERAMIC +-20% 125V 3300P	△
C1003	VCKSFK1020X	CERAMIC +-20% 125V 1000P	△
	OR VCKSPK1020X	CERAMIC +-20% 125V 1000P	△ MKA
	OR VCKSFVK1020X	CERAMIC +-20% 125V 1000P	△ MKA
C1004	ECEA2DUJ21YE	ELECTROLYTIC 200V 120	△
	OR VCESANZD121E	ELECTROLYTIC 200V 120	△
	OR VCESR2D121XE	ELECTROLYTIC 200V 120	△
C1005	ECA2DHG4R78	ELECTROLYTIC 200V 4.7	
C1006	ECKW2H221K85	CERAMIC 500V 220P	
C1007	VCKSLZE224MB	CERAMIC +-20% 25V 0.22	
C1009	VCYSBRE183KX	CERAMIC 25V 0.018	
C1010	ECUV1H101JCN	C CHIP +-5% 50V 100P	
C1011	ECA1HHG4R78	ELECTROLYTIC 50V 4.7	
C1012	ECEA1PEE331	ELECTROLYTIC 18V 330	
C1013	ECA1EM331B	ELECTROLYTIC 25V 330	
C1014	ECEA1HGE470	ELECTROLYTIC 50V 47	
C1016	ECEA1PEE331	ELECTROLYTIC 18V 330	
C1017	ECA0JM102B	ELECTROLYTIC 6.3V 1000	
C1018	ECQ81H104P9	POLYESTER +100%-0% 50V 0.1	
C1021	EEUGA1H1R08	ELECTROLYTIC 50V 1	
C1027	ECKATS103MF	CERAMIC +-20% 250V 0.01	△
	OR ECKNTS103MF8	CERAMIC +-20% 250V 0.01	△
	OR VCKSTQ6103ZY	CERAMIC +80%-20% 125V 0.01	△
	OR VCKSUQ0103MY	CERAMIC +-20% 125V 0.01	△
	OR VCKSU30103MY	CERAMIC +-20% 125V 0.01	△
C1028	ECEA1PEE331	ELECTROLYTIC 18V 330	
C1029	ECUV1H101JCN	C CHIP +-5% 50V 100P	
C1030	VCYSBRE183KX	CERAMIC 25V 0.018	
C1032	ECEA0JKA221	ELECTROLYTIC 6.3V 220	
C1051	ECEA1HKAR47	ELECTROLYTIC 50V 0.47	
C1052	ECEA1CKA100	ELECTROLYTIC 16V 10	
C1058	ECEA0JEE101	ELECTROLYTIC 6.3V 100	
C1059	ECEA1CKA470	ELECTROLYTIC 16V 47	
C3001	ECUV1H103KBN	C CHIP 50V 0.01	
C3002	ECUV1H020CCN	C CHIP +-0.25P 50V 2P	
C3003	ECUV1H103ZFN	C CHIP +80%-20% 50V 0.01	
C3004	ERJ6GEY0800V	MGF CHIP 1/10W 0	●
C3006	ECUV1E104ZFN	C CHIP +80%-20% 25V 0.1	
C3007	ECEA0JKA101	ELECTROLYTIC 6.3V 100	
C3008	ECUV1H181JCN	C CHIP +-5% 50V 180P	
C3009	ECEA1EKA4R7	ELECTROLYTIC 25V 4.7	
C3010	ECUV1H103ZFN	C CHIP +80%-20% 50V 0.01	
C3011	ECUV1H470JCN	C CHIP +-5% 50V 47P	
C3013	ECUV1C224ZFN	C CHIP +80%-20% 16V 0.22	
C3014	ECEA1HKA2R2	ELECTROLYTIC 50V 2.2	
C3015	ECEA0JKA470	ELECTROLYTIC 6.3V 47	
C3016	ECEA1CKS100	ELECTROLYTIC 16V 10	
C3019	ECEA1HKA2R2	ELECTROLYTIC 50V 2.2	
C3020	ECEA1CKA220	ELECTROLYTIC 16V 22	
C3021	ECEA1HKA2R2	ELECTROLYTIC 50V 2.2	
C3022	ECUV1C224ZFN	C CHIP +80%-20% 16V 0.22	
C3023	ECUV1H680JCN	C CHIP +-5% 50V 68P	
C3024	ECUV1E104ZFN	C CHIP +80%-20% 25V 0.1	
C3025	ECUV1E104ZFN	C CHIP +80%-20% 25V 0.1	
C3026	ECUV1H822KBN	C CHIP 50V 8200P	
C3027	ECUV1H103ZFN	C CHIP +80%-20% 50V 0.01	
C3030	ECUV1H103ZFN	C CHIP +80%-20% 50V 0.01	
C3031	ECUV1E104ZFN	C CHIP +80%-20% 25V 0.1	
C3032	ECUV1E104ZFN	C CHIP +80%-20% 25V 0.1	
C3034	ECUV1H181JCN	C CHIP +-5% 50V 180P	
C3035	ECUV1H390JCN	C CHIP +-5% 50V 39P	
C3036	ECUV1E104ZFN	C CHIP +80%-20% 25V 0.1	
C3038	ECEA1CKA100	ELECTROLYTIC 16V 10	
C3041	ECUV1H103ZFN	C CHIP +80%-20% 50V 0.01	
C3043	ECUV1H392KBN	C CHIP 50V 3900P	
C3044	ECUV1H103ZFN	C CHIP +80%-20% 50V 0.01	
C3045	ECEA1HKS3R3	ELECTROLYTIC 50V 3.3	
C3046	ECEA1HKS2R2	ELECTROLYTIC 50V 2.2	
C3047	ECEA0JKA101	ELECTROLYTIC 6.3V 100	
C3048	ECUV1E104ZFN	C CHIP +80%-20% 25V 0.1	
C3050	ECEA0JKS220	ELECTROLYTIC 6.3V 22	
C3054	ECUV1H103ZFN	C CHIP +80%-20% 50V 0.01	

Ref. No.	Part No.	Part Name	Remarks
C3055	ECUV1E104ZFN	C CHIP +80%-20% 25V 0.1	
C3056	ECUV1E104ZFN	C CHIP +80%-20% 25V 0.1	
C3057	ECUV1E104ZFN	C CHIP +80%-20% 25V 0.1	
C3058	ECUV1H103ZFN	C CHIP +80%-20% 50V 0.01	
C3081	ECUV1H103ZFN	C CHIP +80%-20% 50V 0.01	
C3082	ECUV1H33ZKBN	C CHIP 50V 3300P	
C3083	ECUV1H103ZFN	C CHIP +80%-20% 50V 0.01	
C3084	ECUV1E104ZFN	C CHIP +80%-20% 25V 0.1	
C3085	ECUV1E104ZFN	C CHIP +80%-20% 25V 0.1	
C3231	ECEA1HKA010	ELECTROLYTIC 50V 1	
C3232	ECUV1H102KBN	C CHIP 50V 1000P	
C3234	ECEA0JKA470	ELECTROLYTIC 6.3V 47	
C3235	ECUV1H103ZFN	C CHIP +80%-20% 50V 0.01	
C3236	ECUV1E104ZFN	C CHIP +80%-20% 25V 0.1	
C3237	ECUV1H103ZFN	C CHIP +80%-20% 50V 0.01	
C3301	ECEA1CKA100	ELECTROLYTIC 16V 10	
C3302	ECUV1H101JCN	C CHIP +-5% 50V 100P	
C3303	ECEA1CKN100	ELECTROLYTIC 16V 10	
C3304	ECUV1E104ZFN	C CHIP +80%-20% 25V 0.1	
C3305	ECUV1E104ZFN	C CHIP +80%-20% 25V 0.1	
C3306	ECEA1CKA100	ELECTROLYTIC 16V 10	
C4001	ECUV1C224ZFN	C CHIP +80%-20% 16V 0.22	
C4002	ECEA1HKS010	ELECTROLYTIC 50V 1	
C4003	ECUV1H272KBN	C CHIP 50V 2700P	
C4004	ECUV1H103KBN	C CHIP 50V 0.01	
C4005	ECEA0JKS220	ELECTROLYTIC 6.3V 22	
C4006	ECUV1H102KBN	C CHIP 50V 1000P	
C4007	ECEA0JKS220	ELECTROLYTIC 6.3V 22	
C4008	ECEA0JKS470	ELECTROLYTIC 6.3V 47	
C4009	ECEA1CKA100	ELECTROLYTIC 16V 10	
C4010	ECUV1E333KBN	C CHIP 25V 0.033	
C4011	ECUV1H103KBN	C CHIP 50V 0.01	
C4012	ECEA1HKA010	ELECTROLYTIC 50V 1	
C4013	ECEA0JKA470	ELECTROLYTIC 6.3V 47	
C4014	ECEA1HKS010	ELECTROLYTIC 50V 1	
C4102	EQ01562JF	POLYESTER +-5% 100V 5600P	
C4103	ECUV1H103KBN	C CHIP 50V 0.01	
C4104	ECUV1H103KBN	C CHIP 50V 0.01	
C4105	ECEA1CKA220	ELECTROLYTIC 16V 22	
C4171	ECEA1HKA010	ELECTROLYTIC 50V 1	
C5301	ECEA1CKA100	ELECTROLYTIC 16V 10	
C5302	ECEA1EKA47	ELECTROLYTIC 25V 4.7	
C5303	ECEA1HKA47	ELECTROLYTIC 50V 0.47	
C5305	ECEA1HKA47	ELECTROLYTIC 50V 0.47	
C5306	ECEA1CKA220	ELECTROLYTIC 16V 22	
C5307	ECEA1CKN100	ELECTROLYTIC 16V 10	
C5308	ECEA1CKN100	ELECTROLYTIC 16V 10	
C5309	ECUV1H103ZFN	C CHIP +80%-20% 50V 0.01	
C5310	ECEA1CKA220	ELECTROLYTIC 16V 22	
C5312	ECEA1CKA220	ELECTROLYTIC 16V 22	
C5316	ECUV1H220JCN	C CHIP +-5% 50V 22P	
C5351	ECUV1H103ZFN	C CHIP +80%-20% 50V 0.01	
C5352	ECUV1H103ZFN	C CHIP +80%-20% 50V 0.01	
C5354	ECUV1H103ZFN	C CHIP +80%-20% 50V 0.01	
C5381	ECUV1E104ZFN	C CHIP +80%-20% 25V 0.1	
C5382	ECEA0JKA470	ELECTROLYTIC 6.3V 47	
C5401	VCUSTBC224KB	C CHIP 16V 0.22	
C5402	ECUV1H222KBN	C CHIP 50V 2200P	
C5403	ECEA1HKA2R2	ELECTROLYTIC 50V 2.2	
C5501	ECUV1E183KBN	C CHIP 25V 0.018	
C5502	ECUV1H471JCN	C CHIP +-5% 50V 470P	
C5505	ECEA1CKS470	ELECTROLYTIC 16V 47	
C5506	ECUV1H103ZFN	C CHIP +80%-20% 50V 0.01	
C5507	ECEA1CKS100	ELECTROLYTIC 16V 10	
C5508	ECUV1H221JCN	C CHIP +-5% 50V 220P	MKA
C5510	ECEA1HKS010	ELECTROLYTIC 50V 1	
C5511	ECUV1E333KBN	C CHIP 25V 0.033	
C5516	ECUV1E333KBN	C CHIP 25V 0.033	
C5601	ECUV1H103ZFN	C CHIP +80%-20% 50V 0.01	
C5602	ECUV1E104KBN	C CHIP 25V 0.1	
C5603	ECUV1H150JCN	C CHIP +-5% 50V 15P	
C5604	ECEA1HKA010	ELECTROLYTIC 50V 1	
C5605	ECUV1H153KBN	C CHIP 50V 0.015	
C5607	ECUV1H103ZFN	C CHIP +80%-20% 50V 0.01	
C5902	ECEA1CKA470	ELECTROLYTIC 16V 47	
C5903	ECEA1CKA470	ELECTROLYTIC 16V 47	
C5904	ECUV1H103ZFN	C CHIP +80%-20% 50V 0.01	
C5905	ECEA0JKA101	ELECTROLYTIC 6.3V 100	

Ref. No.	Part No.	Part Name	Remarks
C5906	ECUV1H103ZFN	C CHIP +80%-20% 50V 0.01	
C5932	ECUV1H103ZFN	C CHIP +80%-20% 50V 0.01	
C6001	ECEA0JH10ZE	ELECTROLYTIC 6.3V 1000	
C6004	ECEA0JKA101	ELECTROLYTIC 6.3V 100	
C6005	ECEA0JKA470	ELECTROLYTIC 6.3V 47	
C6006	ECUV1E104KBN	C CHIP 25V 0.1	
C6007	ECUV1H220JCN	C CHIP +-5% 50V 22P	
C6009	ECUV1H180JCN	C CHIP +-5% 50V 18P	
C6010	ECUV1H101JCN	C CHIP +-5% 50V 100P	
C6011	ECUV1H101JCN	C CHIP +-5% 50V 100P	
C6013	ECUV1E104ZFN	C CHIP +80%-20% 25V 0.1	
C6024	ECUV1H181JCN	C CHIP +-5% 50V 180P	
C6025	ECEA1HKA47	ELECTROLYTIC 50V 0.47	
C6027	ECEA1HKA010	ELECTROLYTIC 50V 1	
C6028	ECUV1H102KBN	C CHIP 50V 1000P	
C6030	ECUV1E104ZFN	C CHIP +80%-20% 25V 0.1	
C6034	VCUSTBA105KB	C CHIP 10V 1	
C6035	ECUV1E104KBN	C CHIP 25V 0.1	
C6036	ECEA0JKA470	ELECTROLYTIC 6.3V 47	
C6037	ECUV1H272KBN	C CHIP 50V 2700P	
C6039	ECUV1E104ZFN	C CHIP +80%-20% 25V 0.1	
C6043	ECUV1H101JCN	C CHIP +-5% 50V 100P	
C6046	ECEA1EKA47	ELECTROLYTIC 25V 4.7	
C6049	ECUV1E104ZFN	C CHIP +80%-20% 25V 0.1	
C6050	ECEA0JKA220	ELECTROLYTIC 6.3V 22	
C6053	ECUV1H151JCN	C CHIP +-5% 50V 150P	
C6054	ECUV1H151JCN	C CHIP +-5% 50V 150P	
C6055	ECUV1H151JCN	C CHIP +-5% 50V 150P	
C6061	ECEA1HKA47	ELECTROLYTIC 50V 0.47	
C6062	ECEA1HKA47	ELECTROLYTIC 50V 0.47	
C6202	ECUV1H103KBN	C CHIP 50V 0.01	
C6204	ECUV1H103KBN	C CHIP 50V 0.01	
C6208	ECEA0JKA101	ELECTROLYTIC 6.3V 100	
C6210	ECUV1E104KBN	C CHIP 25V 0.1	
C6212	ECUV1H150JCN	C CHIP +-5% 50V 15P	
C6213	ECUV1H100CCN	C CHIP +-0.25P 50V 10P	
C6215	VCUSTBA105KB	C CHIP 10V 1	
C6217	ECUV1H102KBN	C CHIP 50V 1000P	
C6218	ECUV1H103ZFN	C CHIP +80%-20% 50V 0.01	
C6219	ECUV1E104ZFN	C CHIP +80%-20% 25V 0.1	
C6220	ECEA0JKA101	ELECTROLYTIC 6.3V 100	
C6221	ECUV1H102KBN	C CHIP 50V 1000P	
C6222	ECUV1H101JCN	C CHIP +-5% 50V 100P	
C6223	ECEA1HKA010	ELECTROLYTIC 50V 1	
C6224	ECUV1H272KBN	C CHIP 50V 2700P	
C6226	ECUV1E104KBN	C CHIP 25V 0.1	
C6227	ECEA1CKS100	ELECTROLYTIC 16V 10	
C6228	ECUV1E104KBN	C CHIP 25V 0.1	
C6229	ECEA0JKS101	ELECTROLYTIC 6.3V 100	
C6230	ECEA0JKS220	ELECTROLYTIC 6.3V 22	
C6231	ECUV1H272KBN	C CHIP 50V 2700P	
C6232	ECUV1H103KBN	C CHIP 50V 0.01	
C6233	ECUV1H102KBN	C CHIP 50V 1000P	
C6240	ECUV1H101JCN	C CHIP +-5% 50V 100P	
C6241	ECUV1H101JCN	C CHIP +-5% 50V 100P	
C6243	ECUV1E104KBN	C CHIP 25V 0.1	
C6251	ECEA1CKA470	ELECTROLYTIC 16V 47	
COILS			
L1001	ELF15N005AB	LINE FILTER 0.5A 18M	△
	OR VLQ00166	LINE FILTER 0.5A 18M	△
	OR VLQ00167	LINE FILTER 0.5A 18M	△
L1002	VLQSA87D220K		22
L1003	VLQSA87D100K		10
L1006	VLPS0083		
L3001	ELEXT390KE04		39
L3002	ELESN101KA		100
L3004	VLQSH02R270K		27
L3005	VLQSH02R330K		33
L3010	ELESN470KA		47
L3231	ELESN221KA		220
L3301	ELESN101KA		100
L4001	VLQSU06R153K		15M
L4002	ELESN101KA		100
L4004	VLQSH02R100K		10
L4101	ELESN471KA		470
L5901	ELESN101KA		100

(E2, E23, E30, E97, E98, E107, E108)

Ref. No.	Part No.	Part Name	Remarks
L6003	ERJ6GEY0R00V	MGF CHIP 1/10W 0 ●	
L6004	ERJ6GEY0R00V	MGF CHIP 1/10W 0 ●	
L6005	ERJ6GEY0R00V	MGF CHIP 1/10W 0 ●	
L6202	ELESN101KA	100	
		CRYSTAL OSCILLATOR	
X3001	VXS0195		
X5501	CS8503F838		MKA
X5601	VXS0208-B		MKA
X6001	LSSX0019		MKA
X6201	VXS0784		MKA
		PIN HEADERS	
P1001	VJPS0303	CONNECTOR 2P	
P1203	VJPS0771	CONNECTOR PLUG 13P	MKA
P3003	VJPS0885	CONNECTOR 20P	
P3092	VJPS0276	CONNECTOR 6P	
P4001	VJSS0888	FE CONNECTOR 2P	
P6002	VJPS0881	CONNECTOR 8P	
P6003	VJPS0281	CONNECTOR 12P	
P6004	VJPS0278	CONNECTOR 8P	
P6005	VJPS0278	CONNECTOR 8P	
P6201	VJPS0883	CONNECTOR 14P	
		SWITCHES	
SW6001	VSHS0058	LEAF SWITCH-SAFETY TAB	
SW6002	VSSS0162	MODE SELECT SWITCH	
SW6351	EVQ21405R	PUSH SWITCH	
SW6352	EVQ21405R	PUSH SWITCH	
SW6353	EVQ21405R	PUSH SWITCH	
SW6355	EVQ21405R	PUSH SWITCH	
SW6356	EVQ21405R	PUSH SWITCH	
SW6357	EVQ21405R	PUSH SWITCH	
SW6358	EVQ21405R	PUSH SWITCH	
SW6359	EVQ21405R	PUSH SWITCH	
SW6360	EVQ21405R	PUSH SWITCH	
SW6361	EVQ21405R	PUSH SWITCH	
		FUSE & PROTECTOR	
F1001	VFS0003A16	FUSE 125V 1.6A Δ	
	OR VFS0003B16	FUSE 125V 1.6A Δ	
	OR XBA1C16NU100	FUSE 125V 1.6A Δ	
PR1001	ICP-N38-TP1	IC PROTECTOR 1.5A Δ	
	OR UNH000600A	IC PROTECTOR 1.5A Δ	
PR1003	ICP-F25-1	IC PROTECTOR 1.0A Δ	MKA
	OR UN11010	IC PROTECTOR 1.0A Δ	MKA
PR1004	ICP-F25-1	IC PROTECTOR 1.0A Δ	MKA
	OR UN11010	IC PROTECTOR 1.0A Δ	MKA
PR1005	ICP-F25-1	IC PROTECTOR 1.0A Δ	MKA
	OR UN11010	IC PROTECTOR 1.0A Δ	MKA
		TRANSFORMER	
T1001	ETS28AD2J3NC		Δ
	OR ETS28AD2J3PC		Δ
	OR VTPS0041-1		Δ
	OR VTPS0041-2		Δ
	OR VTPS0042-1		Δ
	OR VTPS0042-2		Δ
T4101	VLTS0367		MKA
		PRINTED CIRCUIT BOARD ASSEMBLY	
E2	VEPS4029A	Hi-Fi AUDIO C.B.A.	▲ MKA
		MISCELLANEOUS	
E23	EYF52BC	FUSE HOLDER	
E30	VMTS0035	CUSHION, RUBBER	
E97	VEKS5673	CONNECTOR CABLE W/PLUG	MKA
E98	VEKS5676	CONNECTOR CABLE W/PLUG	MKA
E107	VMFS0134	SHEET, NYLON+LAYON	
E108	VMFS0136	SHEET, NYLON+LAYON	

Ref. No.	Part No.	Part Name	Remarks
		HI-FI AUDIO C.B.A.	■
		INTEGRATED CIRCUITS	
IC4201	AN3962FB-V	IC, LINEAR HI-FI AUDIO PROCESS	
IC4301	BU4053BCF	IC, CMOS STANDARD LOGIC AUDIO	E.S.D.
		OUTPUT SW	
	OR CD4053BCN	IC, CMOS STANDARD LOGIC AUDIO	E.S.D.
		OUTPUT SW	
	OR UPD4053BG	IC, CMOS STANDARD LOGIC AUDIO	E.S.D.
		OUTPUT SW	
IC4302	LM833M	IC, LINEAR OP. AMP	
	OR UPC4570G2-T1	IC, LINEAR OP. AMP	
IC5701	MM1203ND	IC, CMOS STANDARD LOGIC	E.S.D. MKA
		OSD-RGB CONTROL	
IC5702	UPD4053BC	IC, CMOS LOGIC INPUT SELECT	E.S.D. MKA
IC9001	CXA2064M	IC, LINEAR MTS/SAP AUDIO	MKA
		PROCESS	
IC9201	AN7420-NT	IC, LINEAR FM SIGNAL PROCESS	MKA
		TRANSISTORS	
Q4203	2SC2412K1	CHIP	
	OR 2SD601A	CHIP	
Q4301	2SC2412K1	CHIP	
	OR 2SD601A	CHIP	
Q4302	OTC124EK	CHIP	
	OR UN2212	CHIP	
Q4303	OTC143EK	CHIP	
	OR UN221L	CHIP	
Q4304	DTA143EK	CHIP	
	OR UN211L	CHIP	
Q4351	2SC2412K1	CHIP	
	OR 2SD601A	CHIP	
Q5701	2SC2412K1	CHIP	
	OR 2SD601A	CHIP	
Q5703	2SC2412K1	CHIP	
	OR 2SD601A	CHIP	
Q5704	2SC2412K1	CHIP	
	OR 2SD601A	CHIP	
Q5705	2SC2412K1	CHIP	
	OR 2SD601A	CHIP	
Q5706	2SC2412K1	CHIP	
	OR 2SD601A	CHIP	
Q5707	2SA1037K146R	CHIP	
	OR 2SB709A	CHIP	
Q5708	2SA1037K146R	CHIP	
	OR 2SB709A	CHIP	
Q5709	2SC3757(R,S)	CHIP	
Q5710	2SA1037K146R	CHIP	
	OR 2SB709A	CHIP	
Q5711	2SA1037K146R	CHIP	
	OR 2SB709A	CHIP	
Q5712	2SC2412K1	CHIP	
	OR 2SD601A	CHIP	
Q5713	2SC2412K1	CHIP	
	OR 2SD601A	CHIP	
Q9001	2SC2412K1	CHIP	
	OR 2SD601A	CHIP	
Q9002	2SC2412K1	CHIP	
	OR 2SD601A	CHIP	
		DIODES	
D4203	MA165		
	OR WG713A		
	OR 1SS119		
	OR 1SS133T		
D4204	MA165		
	OR WG713A		
	OR 1SS119		
	OR 1SS133T		
D4351	MA4120N-M	12V	
D4352	MA165		
	OR WG713A		
	OR 1SS119		
	OR 1SS133T		

Ref. No.	Part No.	Part Name	Remarks
D5702	MA165		
	OR WG713A		
	OR 1SS119		
	OR 1SS133T		
D5703	ERA15-01V3		
	OR ERA15-01V5		
D5704	ERA15-01V3		
	OR ERA15-01V5		
D5705	MA165		
	OR WG713A		
	OR 1SS119		
	OR 1SS133T		
D5706	MA165		
	OR WG713A		
	OR 1SS119		
	OR 1SS133T		
D9001	MA165		
	OR WG713A		
	OR 1SS119		
	OR 1SS133T		
		RESISTORS	
R4201	ERJ6GEYJ472V	MGF CHIP 1/10W 4.7K	
R4202	ERJ6GEYJ472V	MGF CHIP 1/10W 4.7K	
R4203	ERJ6GEYJ511V	MGF CHIP 1/10W 510	
R4204	ERJ6GEYJ511V	MGF CHIP 1/10W 510	
R4205	ERJ6GEYJ393V	MGF CHIP 1/10W 39K	
R4206	ERJ6GEYJ393V	MGF CHIP 1/10W 39K	
R4207	ERJ6GEYJ183V	MGF CHIP 1/10W 18K	
R4208	ERJ6GEYJ183V	MGF CHIP 1/10W 18K	
R4209	ERJ6GEY0R00V	MGF CHIP 1/10W 0	
R4210	ERA6YE8153V	MGF CHIP $\pm 0.1\%$ 1/10W 15K	
R4211	ERJ6GEYJ152V	MGF CHIP 1/10W 1.5K	
R4212	ERJ6GEYJ152V	MGF CHIP 1/10W 1.5K	
R4213	ERJ6GEYJ123V	MGF CHIP 1/10W 12K	
R4214	ERJ6GEYJ273V	MGF CHIP 1/10W 27K	
R4215	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R4216	ERJ6GEYJ101V	MGF CHIP 1/10W 100	
R4217	ERJ6GEYJ101V	MGF CHIP 1/10W 100	
R4218	ERJ6GEYJ473V	MGF CHIP 1/10W 47K	
R4219	ERJ6GEYJ473V	MGF CHIP 1/10W 47K	
R4229	ERJ6GEYJ393V	MGF CHIP 1/10W 39K	
R4230	ERJ6GEYJ561V	MGF CHIP 1/10W 560	
R4231	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R4232	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R4233	ERJ6GEYJ222V	MGF CHIP 1/10W 2.2K	
R4302	ERJ6GEYJ472V	MGF CHIP 1/10W 4.7K	
R4303	ERJ6GEYJ472V	MGF CHIP 1/10W 4.7K	
R4304	ERJ6GEYJ562V	MGF CHIP 1/10W 5.6K	
R4306	ERJ6GEYJ473V	MGF CHIP 1/10W 47K	
R4308	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R4309	ERJ6GEYJ473V	MGF CHIP 1/10W 47K	
R4311	ERJ6GEYJ101V	MGF CHIP 1/10W 100	
R4312	ERJ6GEYJ473V	MGF CHIP 1/10W 47K	
R4313	ERJ6GEYJ104V	MGF CHIP 1/10W 100K	
R4314	ERJ6GEYJ104V	MGF CHIP 1/10W 100K	
R4316	ERJ6GEYJ101V	MGF CHIP 1/10W 100	
R4318	ERJ6GEY0R00V	MGF CHIP 1/10W 0	
R4320	ERJ6GEY0R00V	MGF CHIP 1/10W 0	
R4322	ERJ6GEYJ101V	MGF CHIP 1/10W 100	
R4323	ERJ6GEYJ101V	MGF CHIP 1/10W 100	
R4324	ERJ6GEYJ473V	MGF CHIP 1/10W 47K	
R4325	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R4326	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R4351	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R5701	EVMEGSA00832	VARIABLE 300	MKA
R5702	ERJ6GEYJ100V	MGF CHIP 1/10W 10	
R5703	ERJ6GEY0R00V	MGF CHIP 1/10W 0	
R5704	EVNDCA03813	VARIABLE 1K	
R5706	ERJ6GEYJ681V	MGF CHIP 1/10W 680	
R5707	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R5708	ERJ6GEY0R00V	MGF CHIP 1/10W 0	
R5710	EVMEGSA00832	VARIABLE 300	MKA
R5711	ERJ6GEYJ100V	MGF CHIP 1/10W 10	
R5712	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R5713	ERJ6GEY0R00V	MGF CHIP 1/10W 0	
R5714	ERJ6GEYJ333V	MGF CHIP 1/10W 33K	

Ref. No.	Part No.	Part Name	Remarks
R5715	EVNDCA03813	VARIABLE 1K	
R5717	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R5718	ERJ6GEYJ681V	MGF CHIP 1/10W 680	
R5719	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R5720	ERJ6GEYJ182V	MGF CHIP 1/10W 1.8K	
R5722	EVMEGSA00832	VARIABLE 300	MKA
R5723	ERJ6GEYJ100V	MGF CHIP 1/10W 10	
R5724	ERJ6GEYJ392V	MGF CHIP 1/10W 3.9K	
R5725	EVNDCA03813	VARIABLE 1K	
R5729	ERJ6GEYJ222V	MGF CHIP $\pm 2\%$ 1/10W 2.2K	
R5730	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R5731	ERJ6GEYJ681V	MGF CHIP 1/10W 680	
R5732	ERJ6GEYJ222V	MGF CHIP 1/10W 2.2K	
R5736	ERJ6GEYJ562V	MGF CHIP 1/10W 5.6K	
R5737	ERJ6GEYJ392V	MGF CHIP 1/10W 3.9K	
R5738	ERJ6GEYJ101V	MGF CHIP 1/10W 100	
R5739	ERJ6GEYJ101V	MGF CHIP 1/10W 100	
R5740	ERJ6GEYJ331V	MGF CHIP 1/10W 330	
R5741	ERJ6GEYJ101V	MGF CHIP 1/10W 100	
R5742	ERJ6GEYJ331V	MGF CHIP 1/10W 330	
R5743	ERJ6GEYJ331V	MGF CHIP 1/10W 330	
R5744	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R5745	ERJ6GEYJ223V	MGF CHIP 1/10W 22K	
R5746	ERJ6GEYJ473V	MGF CHIP 1/10W 47K	
R5747	ERJ6GEYJ222V	MGF CHIP 1/10W 2.2K	
R5748	ERJ6GEYJ222V	MGF CHIP 1/10W 2.2K	
R5749	ERJ6GEYJ222V	MGF CHIP 1/10W 2.2K	
R5750	ERDS2TJ821	820	
R5751	ERJ6GEY0R00V	MGF CHIP 1/10W 0	
R5753	ERJ6GEYJ821V	MGF CHIP 1/10W 820	
R5754	ERJ6GEYJ821V	MGF CHIP 1/10W 820	
R5755	ERDS2TJ103	10K	
R5756	ERJ6GEYJ223V	MGF CHIP 1/10W 22K	
R5757	ERJ6GEYJ472V	MGF CHIP 1/10W 4.7K	
R5758	ERJ6GEYJ472V	MGF CHIP 1/10W 4.7K	
R5759	ERJ6GEYJ472V	MGF CHIP 1/10W 4.7K	
R5760	ERJ6GEYJ682V	MGF CHIP $\pm 2\%$ 1/10W 6.8K	
R5761	ERJ6GEYJ681V	MGF CHIP $\pm 2\%$ 1/10W 680	
R5762	ERJ6GEYJ392V	MGF CHIP $\pm 2\%$ 1/10W 3.9K	
R5763	ERJ6GEYJ392V	MGF CHIP $\pm 2\%$ 1/10W 3.9K	
R5764	ERJ6GEYJ331V	MGF CHIP 1/10W 330	
R5765	ERJ6GEYJ331V	MGF CHIP 1/10W 330	
R5766	ERJ6GEYJ331V	MGF CHIP 1/10W 330	
R9001	EVNCA03814	VARIABLE 10K	
R9002	ERJ6GEYJ683V	MGF CHIP $\pm 2\%$ 1/10W 68K	
R9003	EVNDCA03814	VARIABLE 10K	
R9004	ERJ6GEYJ222V	MGF CHIP 1/10W 2.2K	
R9005	ERJ6GEYJ105V	MGF CHIP 1/10W 1M	
R9006	ERJ6GEYJ104V	MGF CHIP 1/10W 100K	
R9007	ERJ6GEYJ392V	MGF CHIP 1/10W 3.9K	
R9008	EVNCA00853	VARIABLE 100K	MKA
R9009	ERJ6GEYJ332V	MGF CHIP 1/10W 3.3K	
R9010	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R9011	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R9012	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R9013	ERJ6GEYJ333V	MGF CHIP 1/10W 33K	
R9014	ERJ6GEYJ333V	MGF CHIP 1/10W 33K	
R9015	ERJ6GEYJ153V	MGF CHIP 1/10W 15K	
R9016	ERJ6GEYJ153V	MGF CHIP 1/10W 15K	
R9017	ERJ6GEYJ821V	MGF CHIP 1/10W 820	
R9018	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R9201	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R9202	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R9203	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R9204	ERJ6GEYJ224V	MGF CHIP 1/10W 220K	
R9205	ERJ6GEYJ332V	MGF CHIP 1/10W 3.3K	
R9206	EVNCA00853	VARIABLE 100K	MKA
R9207	ERJ6GEYJ332V	MGF CHIP 1/10W 3.3K	
R9208	ERDS2TJ272	2.7K	
R9209	ERJ6GEYJ392V	MGF CHIP 1/10W 3.9K	
R9210	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R9211	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R9212	ERJ6GEYJ153V	MGF CHIP 1/10W 15K	
R9213	ERJ6GEYJ153V	MGF CHIP 1/10W 15K	

(E27, E39, E99, E108, E112)

Ref. No.	Part No.	Part Name	Remarks
		CAPACITORS	
C4201	ECEA1HKA100	ELECTROLYTIC 16V 10	
C4202	ECEA1HKA010	ELECTROLYTIC 50V 1	
C4203	ECEA1HKA010	ELECTROLYTIC 50V 1	
C4204	ECEA1HKA010	ELECTROLYTIC 50V 1	
C4205	ECEA1HKA010	ELECTROLYTIC 50V 1	
C4206	ECEA1HKA010	ELECTROLYTIC 50V 1	
C4207	ECEA1HKA010	ELECTROLYTIC 50V 1	
C4208	ECUV1E104ZFN	C CHIP +80%-20% 25V 0.1	
C4209	ECUV1E104ZFN	C CHIP +80%-20% 25V 0.1	
C4210	ECEA0JKA330	ELECTROLYTIC 6.3V 33	
C4211	ECEA0JKA330	ELECTROLYTIC 6.3V 33	
C4212	ECUV1H473KBN	C CHIP 50V 0.047	
C4213	ECUV1H473KBN	C CHIP 50V 0.047	
C4214	ECEA1HKA2R2	ELECTROLYTIC 50V 2.2	
C4215	ECEA1HKA2R2	ELECTROLYTIC 50V 2.2	
C4216	ECEA0JKA101	ELECTROLYTIC 6.3V 100	
C4217	ECEA0JKA101	ELECTROLYTIC 6.3V 100	
C4218	ECUV1H153KBN	C CHIP 50V 0.015	
C4219	ECUV1H153KBN	C CHIP 50V 0.015	
C4220	ECUV1H103KBN	C CHIP 50V 0.01	
C4221	ECUV1H103KBN	C CHIP 50V 0.01	
C4223	ECUV1H103ZFN	C CHIP +80%-20% 50V 0.01	
C4224	ECUV1C224ZFN	C CHIP +80%-20% 16V 0.22	
C4225	ECEA1HKA010	ELECTROLYTIC 50V 1	
C4226	ECEA1HKA100	ELECTROLYTIC 16V 10	
C4227	ECUV1E104ZFN	C CHIP +80%-20% 25V 0.1	
C4228	ECEA0JKA470	ELECTROLYTIC 6.3V 47	
C4229	ECEA1HKA100	ELECTROLYTIC 16V 10	
C4230	ECEA1HKA100	ELECTROLYTIC 16V 10	
C4232	ECEA1HKA010	ELECTROLYTIC 50V 1	
C4233	ECEA1HKA010	ELECTROLYTIC 50V 1	
C4234	ECUV1E333KBN	C CHIP 25V 0.033	
C4301	ECUV1H103ZFN	C CHIP +80%-20% 50V 0.01	
C4302	ECEA1HKA100	ELECTROLYTIC 16V 10	
C4303	ECEA1HKA100	ELECTROLYTIC 16V 10	
C4304	ECUV1H103ZFN	C CHIP +80%-20% 50V 0.01	
C4305	ECUV1H103ZFN	C CHIP +80%-20% 50V 0.01	
C4306	ECEA1HKA100	ELECTROLYTIC 16V 10	
C4307	ECEA1HKA100	ELECTROLYTIC 16V 10	
C4309	ECEA1HKA100	ELECTROLYTIC 16V 10	
C4310	ECEA1HKA100	ELECTROLYTIC 16V 10	
C4312	ECEA1HKA100	ELECTROLYTIC 16V 10	
C4351	ECEA1HKA100	ELECTROLYTIC 16V 10	
C5701	ECEA1HKA101	ELECTROLYTIC 16V 100	
C5702	ECUV1E104ZFN	C CHIP +80%-20% 25V 0.1	
C5703	ECUV1E104KBN	C CHIP 25V 0.1	
C5704	ECUV1E104KBN	C CHIP 25V 0.1	
C5705	ECEA1HKA100	ELECTROLYTIC 16V 10	
C5706	ECUV1E104KBN	C CHIP 25V 0.1	
C5707	ECUV1E104ZFN	C CHIP +80%-20% 25V 0.1	
C5708	ECEA1HKA100	ELECTROLYTIC 16V 10	
C5709	ECUV1E104KBN	C CHIP 25V 0.1	
C5710	ECUV1H101JCN	C CHIP +5% 50V 100P	
C5711	ECEA1HKA100	ELECTROLYTIC 16V 10	
C5712	ECUV1E104KBN	C CHIP 25V 0.1	
C5713	ECEA1HKA4R7	ELECTROLYTIC 25V 4.7	
C5714	ECUV1H821JCN	C CHIP +5% 50V 820P	
C5715	ECUV1H103ZFN	C CHIP +80%-20% 50V 0.01	
C5716	ECUV1H221KBN	C CHIP 50V 220P	
C5717	ECUV1H103ZFN	C CHIP +80%-20% 50V 0.01	
C5718	ECEA1HKA100	ELECTROLYTIC 16V 10	
C5719	ECEA1HKA101	ELECTROLYTIC 16V 100	
C5720	ECEA1HKA101	ELECTROLYTIC 16V 100	
C5722	ECEA1HKA100	ELECTROLYTIC 16V 10	
C6391	ECEA0JKA221	ELECTROLYTIC 6.3V 220	
C9001	ECEA1HKA4R7	ELECTROLYTIC 25V 4.7	
C9002	ECEA1HKA4R7	ELECTROLYTIC 25V 4.7	
C9003	ECEA1HKA4R7	ELECTROLYTIC 25V 4.7	
C9004	ECEA1HKA4R7	ELECTROLYTIC 25V 4.7	
C9005	ECEA1HKA100	ELECTROLYTIC 16V 10	
C9006	ECEA1HKA010	ELECTROLYTIC 50V 1	
C9007	ECUV1H562KBN	C CHIP 50V 5600P	
C9008	ECUV1E123KBN	C CHIP 25V 0.012	
C9009	ECEA1HKA4R7	ELECTROLYTIC 25V 4.7	
C9010	ECEA1HKA010	ELECTROLYTIC 50V 1	
C9011	ECEA1HKA100	ELECTROLYTIC 16V 10	

Ref. No.	Part No.	Part Name	Remarks
C9012	ECEA1HKA4R7	ELECTROLYTIC 25V 4.7	
C9013	ECEA1HKA4R7	ELECTROLYTIC 25V 4.7	
C9014	ECEA1HKA4R7	ELECTROLYTIC 25V 4.7	
C9015	ECEA1HKA3R3	ELECTROLYTIC 50V 3.3	
C9016	ECEA1HKA4R7	ELECTROLYTIC 25V 4.7	
C9017	ECUV1E473KBN	C CHIP 25V 0.047	
C9018	ECUV1H272KBN	C CHIP 50V 2700P	
C9019	ECUV1H103ZFN	C CHIP +80%-20% 50V 0.01	
C9020	ECEA1HKA220	ELECTROLYTIC 16V 22	
C9201	ECUV1H103ZFN	C CHIP +80%-20% 50V 0.01	
C9202	ECEA0JKA470	ELECTROLYTIC 6.3V 47	
C9203	ECEA1HKA100	ELECTROLYTIC 16V 10	
C9204	ECQP1H102J	POLYESTER +-5% 50V 1000P	
C9205	ECEA1HKA010	ELECTROLYTIC 50V 1	
C9206	ECEA1HKA3R3	ELECTROLYTIC 50V 3.3	
C9207	ECEA1HKA010	ELECTROLYTIC 50V 1	
C9208	ECUV1H223KBN	C CHIP 50V 0.022	
C9209	ECUV1H223KBN	C CHIP 50V 0.022	
C9210	ECEA1HKA010	ELECTROLYTIC 50V 1	
C9211	ECEA1HKA010	ELECTROLYTIC 50V 1	
		FILTERS	
FL4201	VLFS0014		
		COILS	
L9001	ELESN101KA		100
L9201	ELESN101KA		100
		PIN HEADERS	
P4201	VJHS0744	CONNECTOR 2P	MKA
P4202	VJHS0297	PACK PIN 7P	
P4203	VJHS0295	PACK PIN 5P	
P4204	VJHS0298	PACK PIN 8P	
P4205	VJHS0291	PACK PIN 11P	
P4206	VJPS0284	CONNECTOR 4P	
P4207	VJPS0286	CONNECTOR 7P	
P4208	VJPS0285	CONNECTOR 6P	
P4209	VJHS0299	PACK PIN 9P	
P4210	VJHS0295	PACK PIN 5P	
P5301	VJSS0899	CONNECTOR 4P	MKA
P6391	VJHS0295	PACK PIN 5P	
P6392	VJPS0283	CONNECTOR 3P	
		MISCELLANEOUS	
E27	PNA4611M00YA	INFRARED RECEIVER UNIT	MKA
E39	WMA51912	P.C.B. SUPPORT ANGLE	
E99	VEKS5674	CONNECTOR CABLE W/PLUG	MKA
E108	VMFS0136	SHEET,NYLON-LAYON	
E112	VEKS5710	CONNECTOR CABLE W/PLUG	
		OPERATION C.B.A.	■
		RESISTORS	
R6381	ERDS2TJ182		1.8K
R6382	ERDS2TJ392		3.9K
R6383	ERDS2TJ182		1.8K
R6384	ERDS2TJ392		3.9K
R6385	ERDS2TJ123		12K
		PIN HEADERS	
P6381	VEKS5682	CONNECTOR CABLE W/PLUG	MKA
		SWITCHES	
SW6381	EVQ21405R	PUSH SWITCH	
SW6382	EVQ21405R	PUSH SWITCH	
SW6383	EVQ21405R	PUSH SWITCH	
SW6384	EVQ21405R	PUSH SWITCH	
SW6385	EVQ21405R	PUSH SWITCH	
SW6386	EVQ21405R	PUSH SWITCH	
SW6387	EVQ21405R	PUSH SWITCH	

(E117)

Ref. No.	Part No.	Part Name	Remarks
		AUDIO/VIDEO JACK C.B.A. ■	
		DIODES	
D4591	RD9.1EW	ZENER 9.1V	
D4592	MA4120-M	ZENER 12V	
D4797	MA4120-M	ZENER 12V	
D4798	MA4120-M	ZENER 12V	
		RESISTORS	
R4591	ERDS2TJ681	680	
R4592	ERDS2TJ681	680	
R4593	ERDS2TJ681	680	
R4594	ERDS2TJ681	680	
R4791	ERDS2TJ750	75	
R4792	ERDS2TJ561	560	
R4793	ERDS2TJ561	560	
		PIN HEADERS	
P4591	VEKS5680	CONNECTOR CABLE W/PLUG	MKA
P4791	VEKS5681	CONNECTOR CABLE W/PLUG	MKA
		JACKS	
JK4591	LJP28015A	FRONT AUDIO/VIDEO JACK SOCKET	MKA
JK4791	LJP68004A	EARPHONE JACK SOCKET	MKA
		MISCELLANEOUS	
JA	VEKS5705	GROUNDING WIRE	MKA
E117	LSLF0046	FERRITE CORE	MKA
		HI-FI AUDIO/VIDEO HEAD AMP C.B.A. ■	
		INTEGRATED CIRCUITS	
IC2601	AN3809K	IC, LINEAR CYL. DRIVE	
IC3501	AN3361S8	IC, LINEAR HEAD AMP	
IC4401	AN3328S	IC, LINEAR HI-FI AUDIO HEAD AMP	
		RESISTORS	
R2601	ERJ6GEYJ330V	MGF CHIP 1/10W 33	
R2602	ERJ6GEYJ330V	MGF CHIP 1/10W 33	
R2603	ERJ6GEYJ330V	MGF CHIP 1/10W 33	
R2604	ERDS2TJ1R0	1	
R2605	ERDS2TJ1R2	1.2	
R2606	ERJ6GEYJ561V	MGF CHIP 1/10W 560	
R3501	ERJ6GEYJ473V	MGF CHIP 1/10W 47K	
R3502	ERJ6GEYJ560V	MGF CHIP 1/10W 56	
R3503	ERJ6GEYJ560V	MGF CHIP 1/10W 56	
R3504	ERJ6GEYJ560V	MGF CHIP 1/10W 56	
R3505	ERJ6GEYJ560V	MGF CHIP 1/10W 56	
R3506	ERJ6GEYJ561V	MGF CHIP 1/10W 560	
R3507	ERJ6GEYJ561V	MGF CHIP 1/10W 560	
R4405	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R4406	ERJ6GEYJ180V	MGF CHIP 1/10W 18	
R4407	ERJ6GEYJ561V	MGF CHIP 1/10W 560	
R4410	ERJ6GEY0R00V	MGF CHIP 1/10W 0	●
		CAPACITORS	
C2604	ECUV1E104KBN	C CHIP 25V 0.1	
C2605	ECUV1E104KBN	C CHIP 25V 0.1	
C2606	ECUV1E104KBN	C CHIP 25V 0.1	
C2607	ECUV1E104ZFN	C CHIP +80%-20% 25V 0.1	
C2608	ECUV1E104ZFN	C CHIP +80%-20% 25V 0.1	
C2609	ECUV1E104ZFN	C CHIP +80%-20% 25V 0.1	
C2610	ECUV1H103ZFN	C CHIP +80%-20% 50V 0.01	
C2611	ECUV1E333KBN	C CHIP 25V 0.033	
C2612	ECUV1E104ZFN	C CHIP +80%-20% 25V 0.1	

Ref. No.	Part No.	Part Name	Remarks
C2613	ECEA1EKA4R7	ELECTROLYTIC 25V 4.7	
C2614	ECEA1EKA4R7	ELECTROLYTIC 25V 4.7	
C2615	ECEA1EKA4R7	ELECTROLYTIC 25V 4.7	
C3504	ECUV1H103ZFN	C CHIP +80%-20% 50V 0.01	
C3505	ECEA1CKA470	ELECTROLYTIC 16V 47	
C3506	ECUV1E104ZFN	C CHIP +80%-20% 25V 0.1	
C3507	ECUV1H102KBN	C CHIP 50V 1000P	
C3508	ECUV1E104ZFN	C CHIP +80%-20% 25V 0.1	
C3511	ECUV1E104ZFN	C CHIP +80%-20% 25V 0.1	
C3512	ECUV1E104ZFN	C CHIP +80%-20% 25V 0.1	
C3513	ECUV1E104ZFN	C CHIP +80%-20% 25V 0.1	
C3519	ECUV1E104ZFN	C CHIP +80%-20% 25V 0.1	
C3520	ECUV1E104ZFN	C CHIP +80%-20% 25V 0.1	
C3523	ECUV1E104ZFN	C CHIP +80%-20% 25V 0.1	
C3524	ECUV1E104ZFN	C CHIP +80%-20% 25V 0.1	
C3528	ECUV1E104ZFN	C CHIP +80%-20% 25V 0.1	
C3529	ECUV1H103ZFN	C CHIP +80%-20% 50V 0.01	
C3532	ECUV1E104ZFN	C CHIP +80%-20% 25V 0.1	
C3533	ECUV1H103ZFN	C CHIP +80%-20% 50V 0.01	
C4401	ECUV1H102KBN	C CHIP 50V 1000P	
C4402	ECUV1H102KBN	C CHIP 50V 1000P	
C4405	ECUV1H103ZFN	C CHIP +80%-20% 50V 0.01	
C4406	ECUV1H472KBN	C CHIP 50V 4700P	
C4408	ECEA1CKA100	ELECTROLYTIC 16V 10	
C4409	ECUV1H103ZFN	C CHIP +80%-20% 50V 0.01	
C4411	ERJ6GEY0R00V	MGF CHIP 1/10W 0	●
C4412	ECUV1E104ZFN	C CHIP +80%-20% 25V 0.1	
C4413	ECUV1E104ZFN	C CHIP +80%-20% 25V 0.1	
C4414	ECEA0JKA101	ELECTROLYTIC 6.3V 100	
		COILS	
L3501	ELESN101KA	100	
L4401	VLQSH02R101K	100	
		PIN HEADERS	
P3501	VJSS0886	CONNECTOR 20P	
		JUNCTION C.B.A. ■	
		RESISTORS	
R2531	ERDS2TJ270	27	
		CAPACITORS	
C2531	ECEA1CKA220	ELECTROLYTIC 16V 22	
C2532	ECEA1CKA220	ELECTROLYTIC 16V 22	
C2533	ECEA1CKA220	ELECTROLYTIC 16V 22	
		PIN HEADERS	
P2531	VJSS0884	CONNECTOR 14P	
		DVD SUB C.B.A. ■	
		INTEGRATED CIRCUITS	
IC1501	STR-66651	IC, HYBRID SWITCHING CONTROL	E.S.D. MKA
IC1502	PS2501-1-X	IC, LINEAR ERROR V. DET	
	OR 0N3131-R.KT	IC, LINEAR ERROR V. DET	
	OR 0N3131-S.KT	IC, LINEAR ERROR V. DET	
IC1504	SE012N	IC, LINEAR SHUNT REGULATOR	MKA
IC1505	SI-3150F	IC, LINEAR +18V REGULATOR	MKA
IC1506	SI-3850J	IC, LINEAR +5V REGULATOR	
IC4501	TA8211AH	IC, BIPOLAR LINEAR POWER AMP	E.S.D.
IC4601	M62420SP	IC, CMOS STANDARD LOGIC TONE CONTROL	E.S.D. MKA
IC4751	T0TX178A	IC, CMOS STANDARD LOGIC OPTICAL	E.S.D. MKA
		TRANSISTORS	
Q1501	2SA1567		
Q1502	2SD2259		

Ref. No.	Part No.	Part Name	Remarks
Q4501	2SD1328(R,S,T)	CHIP	MKA
Q4502	2SD1328(R,S,T)	CHIP	MKA
Q4504	2SD159(T)		
Q4601	25C3311ARS		MKA
Q7002	25A1309A(R,S)		
		DIODES	
D1501	S1WBA40		△
	OR S1WBA60		△
D1502	AK03V0		
	OR 1GWJ43TPA3		
D1503	AG01Z		MKA
D1505	AG01Z		MKA
D1506	AG01Z		MKA
D1507	AG01Z		MKA
D1508	AG01Z		MKA
D1510	RK33LFB1		MKA
D1512	EK16		
D1513	RK33LFB1		MKA
D1515	MA4300-M		
D4501	MA165		
	OR W6713A		
	OR 1SS119		
	OR 1SS133T		
D4502	MA165		
	OR W6713A		
	OR 1SS119		
	OR 1SS133T		
D4601	MA165		
	OR W6713A		
	OR 1SS119		
	OR 1SS133T		
D4602	MA4091-M	ZENER 9.1V	
	OR MA4091-MKT	ZENER 9.1V	
	OR MA4091-MMKT	ZENER 9.1V	
	OR RD9.1ESAB1	ZENER 9.1V	
	OR RD9.1ESAB2	ZENER 9.1V	
	OR 04AZ9.1ZTPA7	ZENER 9.1V	
D4701	MA4120-M	ZENER 12V	
D4704	MA4120-M	ZENER 12V	
D4705	MA4120-M	ZENER 12V	
D4708	MA4120-M	ZENER 12V	
D4709	MA4120-M	ZENER 12V	
D4710	MA4120-M	ZENER 12V	
D4711	MA4120-M	ZENER 12V	
D4712	MA4120-M	ZENER 12V	
D4713	MA4120-M	ZENER 12V	
D4714	MA4120-M	ZENER 12V	
D4715	MA4120-M	ZENER 12V	
D7001	MA4120-M	ZENER 12V	
		RESISTORS	
R1501	ERG2S3683P	METAL OXIDE 2W 68K	
R1502	ERD2FCG681P	FUSE +2% 680	△ MKA
	OR ERD2FCG681V	FUSE +2% 680	△
R1504	ERX2SJ222P	METAL FILM 2W 0.22	
R1505	ERJ6GEYJ332V	MGF CHIP 1/10W 3.3K	
R1507	ERJ6GEYJ222V	MGF CHIP 1/10W 2.2K	
R1508	ERG2S333H	METAL OXIDE 2W 33K	
R1510	ERDS2TJ100		10
R1515	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R1516	ERJ6GEYJ221V	MGF CHIP 1/10W 220	
R1517	ERDS2TJ101		100
R1521	ERDS2TJ272		2.7K
R1524	ERJ6GEYJ391V	MGF CHIP 1/10W 390	
R1525	ERG3S1820H	METAL OXIDE 3W 82	MKA
R1526	VRESE2TJ391		1/2W 390
R1527	ERDS2TJ102		1K
R1528	ERDS2TJ103		10K
R1529	ERG3S1820H	METAL OXIDE 3W 82	
R4502	ERJ6GEYJ683V	MGF CHIP 1/10W 68K	
R4503	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R4504	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R4505	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R4506	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R4507	ERJ6GEYJ104V	MGF CHIP 1/10W 100K	

Ref. No.	Part No.	Part Name	Remarks
R4508	ERJ6GEYJ104V	MGF CHIP 1/10W 100K	
R4509	ERJ6GEYJ472V	MGF CHIP 1/10W 4.7K	
R4510	ERJ6GEYJ472V	MGF CHIP 1/10W 4.7K	
R4511	ERJ6GEYJ682V	MGF CHIP 1/10W 6.8K	
R4513	ERJ6GEYJ682V	MGF CHIP 1/10W 6.8K	
R4514	ERJ6GEYJ471V	MGF CHIP 1/10W 470	
R4515	ERJ6GEYJ471V	MGF CHIP 1/10W 470	
R4518	ERJ6GEYJ392V	MGF CHIP 1/10W 3.9K	
R4519	ERDS2TJ4R7		4.7
R4521	ERJ6GEYJ101V	MGF CHIP 1/10W 100	
R4522	ERDS2TJ4R7		4.7
R4523	ERJ6GEYJ101V	MGF CHIP 1/10W 100	
R4524	ERJ6GEYJ392V	MGF CHIP 1/10W 3.9K	
R4526	ERDS2TJ4R7		4.7
R4527	ERDS2TJ4R7		4.7
R4528	ERDS2TJ561		560
R4601	ERDS2TJ561		560
R4602	ERJ6GEYJ472V	MGF CHIP 1/10W 4.7K	
R4603	ERJ6GEYJ472V	MGF CHIP 1/10W 4.7K	
R4604	ERJ6GEYJ182V	MGF CHIP 1/10W 1.8K	
R4605	ERJ6GEYJ182V	MGF CHIP 1/10W 1.8K	
R4606	ERJ6GEYJ101V	MGF CHIP 1/10W 100	
R4607	ERJ6GEYJ101V	MGF CHIP 1/10W 100	
R4608	ERJ6GEYJ101V	MGF CHIP 1/10W 100	
R4609	ERJ6GEYJ104V	MGF CHIP 1/10W 100K	
R4610	ERJ6GEYJ101V	MGF CHIP 1/10W 100	
R4701	ERDS2TJ102		1K
R4702	ERDS2TJ102		1K
R4703	ERJ6GEY0R00V	MGF CHIP 1/10W 0	●
R7001	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R7002	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R7003	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R7005	ERJ6GEY0R00V	MGF CHIP 1/10W 0	●
R7006	ERJ6GEYJ561V	MGF CHIP 1/10W 560	
R7007	ERJ6GEYJ271V	MGF CHIP 1/10W 270	
R7010	ERJ6GEYJ222V	MGF CHIP 1/10W 2.2K	
R7011	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R7012	ERDS2TJ102		1K
		CAPACITORS	
C1501	ECKATS103MF	CERAMIC +-20% 125V 0.01	△
	OR ECKETS103MF	CERAMIC +-20% 125V 0.01	△
	OR VCKSEK0103PZ	CERAMIC +80%-20% 125V 0.01	△
	OR VCKSEMD103PZ	CERAMIC +80%-20% 125V 0.01	△
	OR VCKST3G103MY	CERAMIC +-20% 250V 0.01	△
	OR VCKSU3D103MY	CERAMIC +-20% 125V 0.01	△ MKA
C1502	VCKSF0K102MX	CERAMIC +-20% 125V 1000P	△
C1505	ECKATS103MF	CERAMIC +-20% 125V 0.01	△
	OR ECKETS103MF	CERAMIC +-20% 125V 0.01	△
	OR VCKSEK0103PZ	CERAMIC +80%-20% 125V 0.01	△
	OR VCKSEMD103PZ	CERAMIC +80%-20% 125V 0.01	△
	OR VCKST3G103MY	CERAMIC +-20% 250V 0.01	△
	OR VCKSU3D103MY	CERAMIC +-20% 125V 0.01	△ MKA
C1506	ECA1HHG470B	ELECTROLYTIC 50V 47	
C1507	ECUV1H471JCN	C CHIP +-5% 50V 470P	
C1508	ECES2DU221EG	ELECTROLYTIC 200V 220	△
C1509	ECKZ3D471KB	CERAMIC 2KV 470	
C1510	ECQ81H104KF	POLYESTER 50V 0.1	
C1512	ECKW2H561KB5	CERAMIC 500V 560P	MKA
C1513	ECKW1H102KB5	CERAMIC 50V 1000P	
C1515	ECUV1H222KBN	C CHIP 50V 2200P	
C1516	ECUV1H222KBN	C CHIP 50V 2200P	
C1517	ECEA1PEE102	ELECTROLYTIC 18V 1000	
C1518	ECA1EM102B	ELECTROLYTIC 25V 1000	MKA
C1519	ECEA1PEE102	ELECTROLYTIC 18V 1000	
C1523	ECEA1PEE102	ELECTROLYTIC 18V 1000	
C1524	ECEA1PEE102	ELECTROLYTIC 18V 1000	
C1526	ECA2DHG4R7B	ELECTROLYTIC 200V 4.7	
C1528	ECA1HHG2R2B	ELECTROLYTIC 50V 2.2	MKA
C1530	ECEA1PEE102	ELECTROLYTIC 18V 1000	
C1531	ECUV1H222KBN	C CHIP 50V 2200P	
C1532	ECKW1H222KB5	CERAMIC 50V 2200P	
C1533	ECA1EM102B	ELECTROLYTIC 25V 1000	MKA
C1534	ECA1EM102B	ELECTROLYTIC 25V 1000	MKA
C1535	ECKW3A102KB	CERAMIC 1KV 1000P	
C4501	ECA1EM471B	ELECTROLYTIC 25V 470	
C4502	ECA1HM4R7B	ELECTROLYTIC 50V 4.7	

(E101, E106, E114, E115, E116)

[illegible][illegible]

Ref. No.	Part No.	Part Name	Remarks
		RESISTORS	
R401	ERDS2TJ561	560	
R402	ERDS2TJ103	10K	
R405	ERG2SJ561H	METAL OXIDE 2W 560	
R406	ERDS2TJ334	330K	
R409	ERDS2TJ273	27K	
R410	ERDS2TJ272	2.7K	
R411	ERDS2TJ823	82K	
R413	ERDS2TJ333	33K	
R414	ERX1SJ1R2P	METAL OXIDE 1W 1.2 Δ	MKA
R422	ERD2SFJ101P	100 Δ	
R427	ERQ14AJ5R6P	FUSE 5.6 Δ	MKA
R431	ERDS2TJ103	10K	
R432	ERDS2TJ563	56K	
R433	ERDS2TJ472	4.7K	
R434	ERDS2TJ103	10K	
R435	ERDS2TJ102	1K	
R439	ERDS2TJ103	10K	
R466	ERDS2TJ683	68K	
R468	ERDS2TJ103	10K	
R469	ERDS2TJ222	2.2K	
R470	ERDS2TJ222	2.2K	
R471	ERDS2TJ471	470	
R472	ERDS2TJ471	470	
R473	ERDS2TJ101	100	
R474	ERDS2TJ102	1K	
R475	ERDS2TJ102	1K	
R476	ERDS2TJ561	560	
R477	ERDS2T0	0 \bullet	
R478	ERDS2TJ332	3.3K	
R480	ERDS2TJ391	390	
R481	ERDS2TJ102	1K	
R482	ERDS2TJ150	15	
R484	ERDS2TJ102	1K	
R486	ERDS2TJ561	560	
R487	ERDS2TJ102	1K	
R501	ERDS2TJ221	220	
R502	ERDS2TJ332	3.3K	
R503	ERBS2TKF1182	METAL FILM +-1K 11.8K Δ	MKA
	OR VRESATF1182	METAL FILM +-10K 11.8K Δ	MKA
R505	ERDS2TJ561	560	
R507	ERDS2TJ472	4.7K	
R508	ERDS2TJ472	4.7K	
R509	ERDS2TJ101	100	
R510	ERDS2TJ472	4.7K	
R511	ERG3FJ272H	METAL OXIDE 3W 2.7K	MKA
R513	ERG12SJ560P	METAL OXIDE 1/2W 56	MKA
R515	ERDS2TJ563	56K	
R516	LAR05222109	W FLMPRF 5W 2.2K	MKA
R519	ERDS2TJ563	56K	
R521	ERDS2TJ101	100	
R522	ERDS2TJ103	10K	
R523	ERDS2TJ153	15K	
R524	ERDS2TJ223	22K	
R525	ERDS2TJ222	2.2K	
R528	ERDS2TJ272	2.7K	
R531	ERDS2TJ223	22K	
R541	ERDS2TJ473	47K	
R542	ERDS2TJ103	10K	
R543	ERDS2TJ472	4.7K	
R545	ERDS2TJ331	330	
R546	ERDS2TJ103	10K	
R547	ERDS2TJ153	15K	
R552	ERDS2TJ103	10K	
R553	ERDS2TJ102	1K	
R554	ERDS2TJ822	8.2K	
R555	ERDS2TJ683	68K	
R556	ERDS2TJ683	68K	
R558	ERG2ANJ102H	METAL OXIDE 2W 1K	
R559	ERDS2TJ103	10K	
R561	ERQ3CJ3R3H	FUSE 3W 3.3 Δ	MKA
R562	ERFSZK2R2	W FLMPRF +-10K 5W 2.2	
R571	ERDS2TJ101	100	
R572	ERDS2TJ102	1K	
R573	ERDS2TJ221	220	
R574	ERDS2TJ273	27K	
R581	ERDS1FJ1R0P	1/2W 1 Δ	

Ref. No.	Part No.	Part Name	Remarks
R582	ERDS1FJ1R0P	1/2W 1 Δ	
R584	ERDS2TJ562	5.6K	
R585	ERDS2TJ153	15K	
R591	ERFSZJ121	W FLMPRF 5W 120	
R801	ERFSZK8R2	W FLMPRF +-10K 5W 0.82 Δ	
R802	ERDS1FJ103P	1/2W 10K Δ	
	OR ERDS1FPJ103V	1/2W 10K Δ	
R803	ERF10ZK8R2S	W FLMPRF +-10K 10W 8.2	MKA
R804	ERF20ZJ131	W FLMPRF 20W 130	
R805	ERDS2TJ104	100K	
R806	ERQ14AJ470P	FUSE 47 Δ	
R810	ERDS2TJ222	2.2K	
R811	ERDS2TJ103	10K	
R812	VRES2TK825T	SOLID +-10K 1/2W 8.2M Δ	
R813	ERDS2TJ124	120K	
		CAPACITORS	
C401	ECEA1HGE2R2	ELECTROLYTIC 50V 2.2	
C402	ECA1M4718	ELECTROLYTIC 16V 470	
C408	ECA1HGE010K3	ELECTROLYTIC 50V 1	MKA
C409	ECA1VM101B	ELECTROLYTIC 35V 100	
C413	ECQ81H104KF	POLYESTER 50V 0.1	
C414	ECA1M222E		MKA
C418	ECA1VM101B	ELECTROLYTIC 35V 100	
C458	ECQ81H103KM	POLYESTER 50V 0.01	MKA
C501	ECQ81H473KM	POLYESTER 50V 0.047	MKA
C510	ECKW2H681K85	CERAMIC 500V 680P	
C513	ECA1HM100B	ELECTROLYTIC 50V 10	
C520	ECQ81H103KM	POLYESTER 50V 0.01	MKA
C521	ECA1HM100B	ELECTROLYTIC 50V 10	
C524	ECKC30152KBP	CERAMIC 2KV 1500P Δ	
C531	ECA1HM3R3B	ELECTROLYTIC 50V 3.3UF	MKA
C541	ECA1HM100B	ELECTROLYTIC 50V 10	
C553	ECKW2H21K85	CERAMIC 500V 220P	
C554	ECKW12H562J5	POLYESTER +-5K 1250V 5600 Δ	MKA
C556	ECWF2564J8B	POLYESTER +-5K 250V 0.56 Δ	MKA
C558	ECA1VM101B	ELECTROLYTIC 35V 100	
C560	ECA2EM100E	ELECTROLYTIC 250V 10	MKA
C561	ECA2OM4R7B	ELECTROLYTIC 160V 4.7	
C563	ECA180V33	ELECTROLYTIC 180V 33	
C571	ECA1HM3R3B	ELECTROLYTIC 50V 3.3	MKA
C573	ECKW2H122K85	CERAMIC 500V 1200P	
C581	ECKW12H103J5	POLYESTER +-5K 1200V 0.01 Δ	MKA
C801	ECKM2H472PE7	CERAMIC +100K-0% 500V 4700P Δ	
	OR ECKM2H472PU7	CERAMIC +100K-0% 500V 4700P Δ	
	OR ECKM2H472PU7	CERAMIC +100K-0% 500V 4700P Δ	
C802	ECKM2H472PE7	CERAMIC +100K-0% 500V 4700P Δ	
	OR ECKM2H472PU7	CERAMIC +100K-0% 500V 4700P Δ	
	OR ECKM2H472PU7	CERAMIC +100K-0% 500V 4700P Δ	
C803	ECKM2H472PE7	CERAMIC +100K-0% 500V 4700P Δ	
	OR ECKM2H472PU7	CERAMIC +100K-0% 500V 4700P Δ	
	OR ECKM2H472PU7	CERAMIC +100K-0% 500V 4700P Δ	
C804	ECKM2H472PE7	CERAMIC +100K-0% 500V 4700P Δ	
	OR ECKM2H472PU7	CERAMIC +100K-0% 500V 4700P Δ	
	OR ECKM2H472PU7	CERAMIC +100K-0% 500V 4700P Δ	
C805	ECOS2DP6818B	ELECTROLYTIC 200V 680 Δ	MKA
C806	ECA2EM330E	ELECTROLYTIC 250V 33	MKA
C807	ECKCNS223ZVP	CERAMIC +80K-20% 125V 0.022 Δ	MKA
C810	VCKSFKK102MX	CERAMIC +-20K 125V 1000P Δ	
	OR VCKSFMK102MX	CERAMIC +-20K 125V 1000P Δ	MKA
	OR VCKSFVK102MX	CERAMIC +-20K 125V 1000P Δ	MKA
C811	ECKCNS223ZVP	CERAMIC +80K-20% 125V 0.022 Δ	MKA
C814	ECKATS103MF	CERAMIC +-20K 125V 0.01 Δ	
	OR VCKSEKD103PZ	CERAMIC +80K-20% 125V 0.01 Δ	
	OR VCKSEMD103PZ	CERAMIC +80K-20% 125V 0.01 Δ	
	OR VCKSGKD103QZ	CERAMIC +80K-20% 125V 0.01 Δ	
	OR VCKSGMD103QZ	CERAMIC +80K-20% 125V 0.01 Δ	
	OR VCKSTKG103ZY	CERAMIC +80K-20% 125V 0.01 Δ	
	OR VCKSTMG103ZY	CERAMIC +80K-20% 125V 0.01 Δ	
	OR VCKST3G103ZY	CERAMIC +80K-20% 125V 0.01 Δ	MKA
	OR VCKSUKD103MY	CERAMIC +-20K 125V 0.01 Δ	
	OR VCKSUMD103MY	CERAMIC +-20K 125V 0.01 Δ	
	OR VCKSU3D103MY	CERAMIC +-20K 125V 0.01 Δ	
C815	ECKCNS223ZVP	CERAMIC +80K-20% 125V 0.022 Δ	MKA

(E22, E41, E42, E43, E44, E45, E46, E48, E51, E52, E53, E73, E105)

Ref. No.	Part No.	Part Name	Remarks
		COILS	
L501	LLH6602T	HORIZONTAL LINEAR COIL	△ MKA
L801	ELF180650C	LINE FILTER 1.7A 8.2M	△
L802	VLQSAE8D220K		22 MKA
L803	ELF180650C	LINE FILTER 1.7A 8.2M	△
		PIN HEADERS	
P1	VJSS0875	CONNECTOR RECEPTACLE 13P	MKA
P552	VJSS0898	4P WIRE TRAP	MKA
P553	VEKS5704	GROUNIDNG WIRE	
P801	VEKS5683	CONNECTOR CABLE W/PLUG	MKA
P802	VEKS5684	CONNECTOR CABLE W/PLUG	MKA
		FUSE & PROTECTOR	
F801	XBA1F40NU100	FUSE 125V 4A	△
		RELAY	
RL801	TSEH0005	RELAY, 120V	△
		TRANSFORMER	
T501	ETH19Y70AY		
T502	ETE16Z37AY		△
T551	KFT4AB247F		△ MKA
		MISCELLANEOUS	
E22	LSJA0255	AC CORD W/PLUG	△ MKA
E41	LSS0254	HEAT SINK	MKA
E42	TUC77627	HEAT SINK	MKA
	OR LUS63003A	HEAT SINK	MKA
E43	TUC77628-1	HEAT SINK	MKA
E44	LML69001A	ANODE LEAD CLAMPER	MKA
E45	TMM76403-1	CLAMPER	
E46	XTV3+10G	TAPPING SCREW, STEEL	
E48	XYN3+F10S	SCREW W/WASHER, STEEL	
E51	TJC6319	FUSE HOLDER	
E52	TUC77542	FBT SHIELD PLATE, STEEL	MKA
E53	TMM16480-1	CLAMPER	
E73	TUX77809	CLAMPER	MKA
E105	XYE3+EF8	SCREW, STEEL	
		CRT C.B.A.	■
		INTEGRATED CIRCUITS	
IC351	TDA6103Q	IC, LINEAR RGB AMP	MKA
		DIODES	
D352	ERA22-04V5		MKA
D353	ERA22-04V5		MKA
D354	ERA22-04V5		MKA
		RESISTORS	
R354	ERD25TJ272		2.7K
R355	ERD25TJ272		2.7K
R356	ERD25TJ272		2.7K
R357	ERG1SJ104P	METAL OXIDE 1W	100K
R359	ERG1SJ104P	METAL OXIDE 1W	100K
R361	ERG1SJ104P	METAL OXIDE 1W	100K
R363	ERDS2TJ471		470
R364	ERDS2TJ222		2.2K
R365	ERDS2TJ471		470
R366	ERDS2TJ222		2.2K
R367	ERDS2TJ471		470
R368	ERDS2TJ222		2.2K
R369	ERDS2TJ102		1K
R371	ERDS2TJ102		1K
R373	ERDS2TJ102		1K
R375	ERDS2TJ102		1K

(E49, E50, E56)

Ref. No.	Part No.	Part Name	Remarks
R376	ERDS2TJ473		47K
R377	ERDS2TJ103		10K
R378	ERDS2TJ104		100K
R379	ERDS2TJ124		120K
R380	ERDS2TJ472		4.7K
		CAPACITORS	
C354	VCKSK2M102KB	CERAMIC 2KV 1000P	MKA
C361	VCYSARH100JC	CERAMIC +-5% 50V 10P	
C363	VCYSARH100JC	CERAMIC +-5% 50V 10P	
C364	ECEA1HKAR22	ELECTROLYTIC 50V 0.22	
C365	ECEA1CKN100	ELECTROLYTIC 16V 10	
C366	ECA2EM4R78	ELECTROLYTIC 250V 4.7	MKA
		PIN HEADERS	
P351	VJWS4MS500IC	PARALLEL CONNECTOR 4P	
P352	VJWS4NS400IC	PARALLEL CONNECTOR 4P	
P353	TJSC01200	CRT SOCKET	MKA
		MISCELLANEOUS	
E49	XYN3+F6S	SCREW W/WASHER, STEEL	
E50	TMM7443-1	CLAMPER	
E56	TUC76649-4	HEAT SINK	
		ELECTRICAL PARTS LOCATED ON CHASSIS	
IC2501	AN3845SC	IC, LINEAR CAP./LOADING DRIVE	

